CHEMICAL MARKETS

RUPERT C. WATSON
Managing Editor

WILLIAMS HAYNES, Publisher

ELMER F. SHEETS
Assistant Editor

VOLUME XXII | ESTABLISHED 1914 | NUMBER 3

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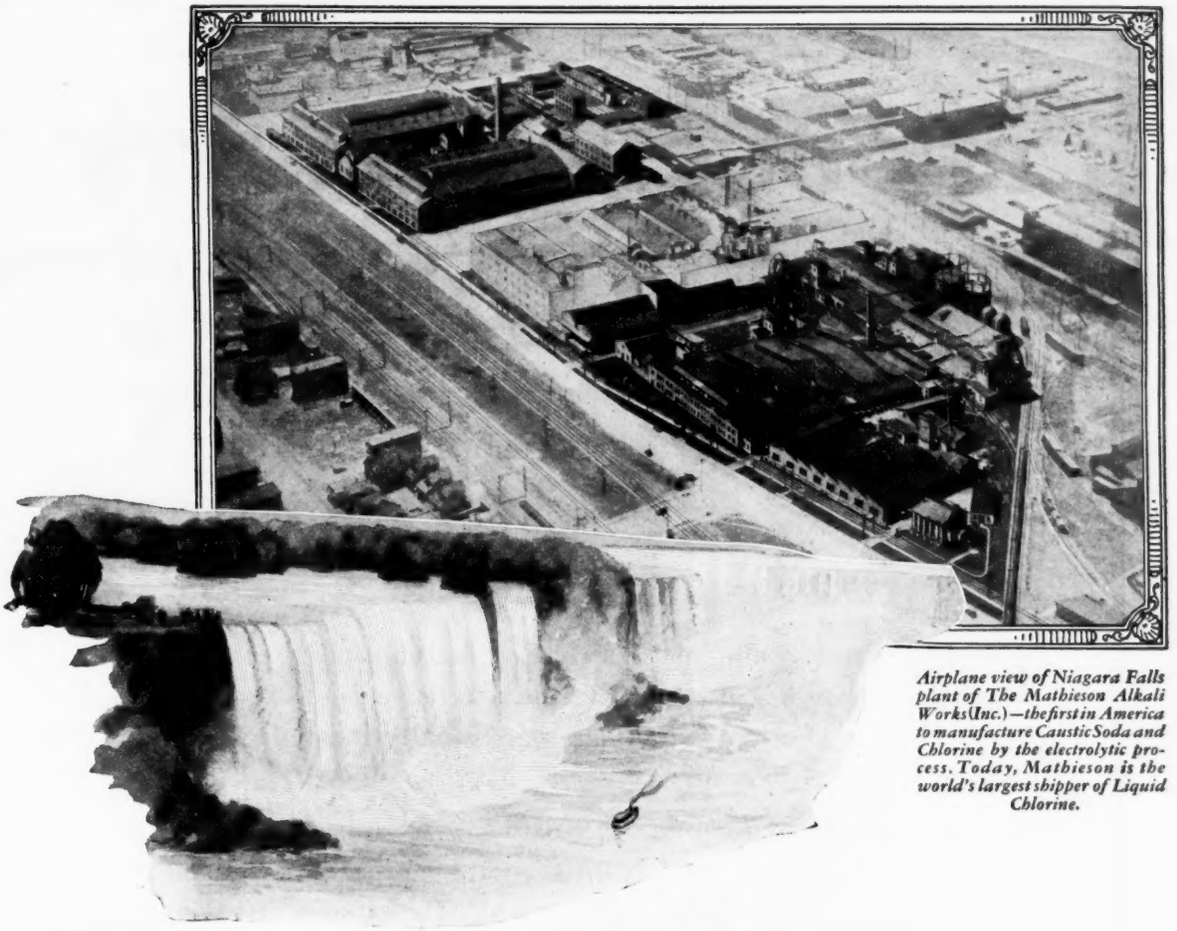

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ALCOHOL THROUGH THE AGES · NUMBER XI

UNDER SACRED LOCK AND KEY

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Since conflict cradles changes, so did the strife which brought about the downfall and dissolution of certain Monasteries bring important changes in the history of distillation. The secret became public property, subject to a wider development for the general good of mankind.

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NOTE: This is number ELEVEN of a series of advertisements which will appear in this and other trade publications. We have had so many comments and requests for copies of these advertisements that we have decided to issue the entire series in booklet form, after they have appeared in the publications. As the edition will be limited to the number of requests on hand at the time of publication, we invite you to write for your copy now—it will be sent FREE when the booklet is completed. Address the Kentucky Alcohol Corporation direct, or any one of our sales representatives, whose names appear regularly in this space.

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Muriatic Acid
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Chemically Pure Acids and Ammonia

Insecticides and Fungicides

Also

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or local dealers

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Pioneer Producers of Air Nitrogen Products in America

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Ethyl Lactate is but one of a diversified line of about 75 industrial chemicals supplied by the American Cyanamid Company, many of which have been developed in the Company's own research laboratories. These products are now being used in the Textile, Mining, Rubber, Ice and Refrigerating, Metal Treating, Electroplating, Lacquer, and other industries. A partial list is:

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  Anhydrous
  Aqua
Ammonium Chloride
Ammonium Phosphate
Carbonate of Potash
Case Hardening Compounds
Caustic Soda
Copper Sulphate
Cyanide, Aero Brand
Cyanide, Copper
Cyanide, Potassium
Cyanide, Silver
Cyanide, Sodium
Cyanide, Zinc
Dicyandiamid
Diorthotolylguanidine
Diphenylguanidine
Ethyl Lactate
Ethyl Oxybutyrate
Formic Acid
Hydrocyanic Acid, Liquid
Lead Acetate
Red Prussiate of Potash
Soda Ash
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  (Thiocyanates)
Thiourea
Urea
Yellow Prussiate of Potash
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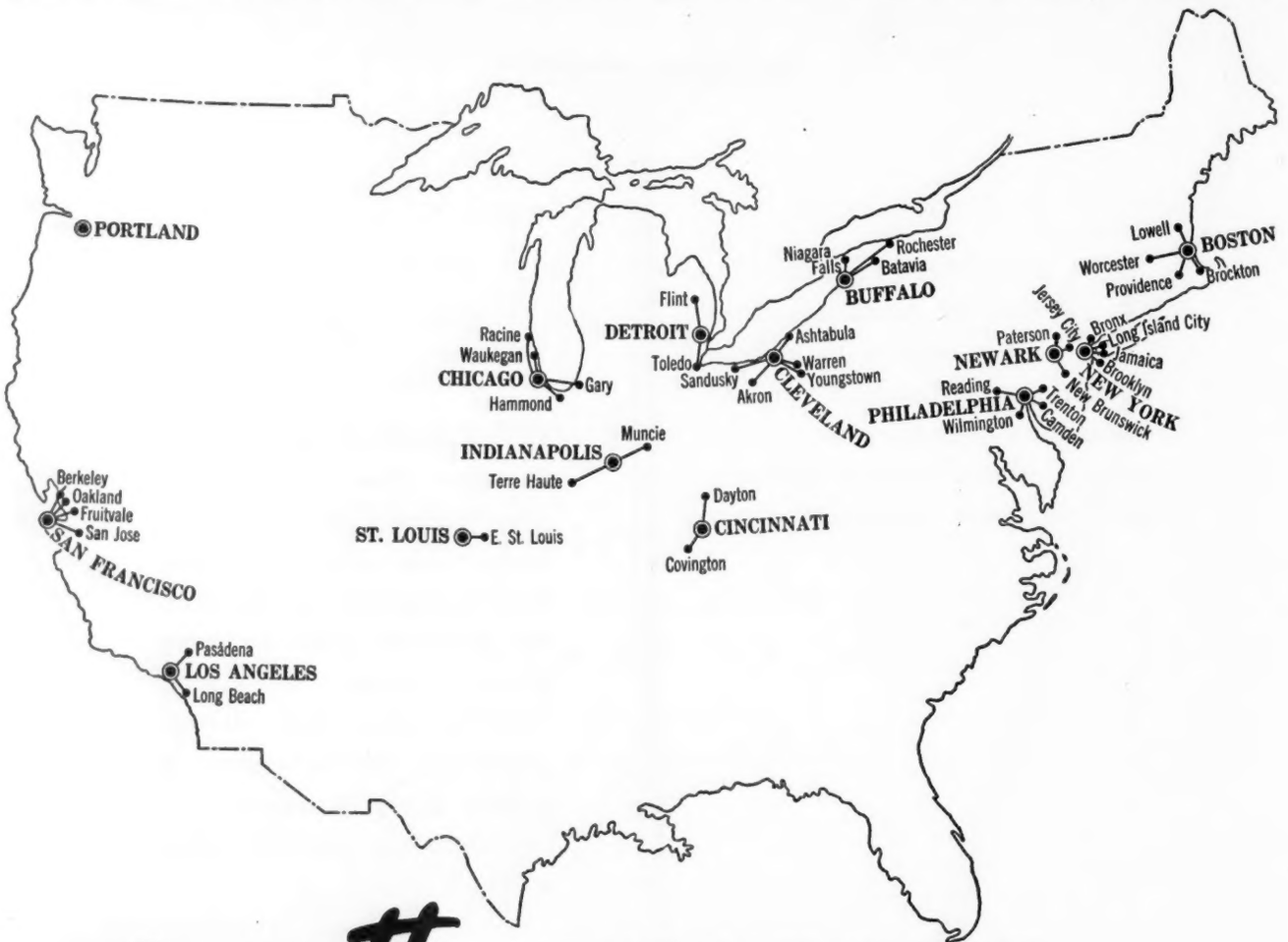

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COMMERCIALLY PURE BENZOL
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The Barrett Company

Ammonia-Benzol Department

40 Rector Street — New York, N. Y.

Coast to Coast Producing Points

CHEMICAL MARKETS

VOL. XXII. MARCH, 1928 NO. 3.

Foreign Markets

CONSIDERING that we produce half of the world's chemicals and enjoy but one-fifth of the world's trade in chemicals appears on the face of it to be a thundering criticism of our indifference to export business. Germany exports a third of her chemical production, only an eighth of our output goes abroad. Remembering too, that most branches of the American chemical industry possess a potential, if not an actual production capacity some thirty per cent. over domestic consumption, these same figures might raise serious questions as to the boasted business acumen of our industrial leaders.

WHY not solve our over-production problem; relieve the pressure of our domestic competition; raise our American prices; all in one stroke by exporting?

PLAUSIBLE as this easy solution of many troubles appears it is neither practical business nor sound economics. Theoretically it is a survival of that ancient, die-hard fallacy that the wealth of a nation is to be judged solely by its supply of gold. Actually, foreign sales, unless they show an additional profit, are not in the long run an advantage, but a loss to the producer.

IT is a delusion to think that it is more profitable to sell a carload of caustic to a soapmaker in Brazil than to a soapmaker in Ohio. As a matter of fact it is less profitable. The domestic soap factory will make more soap, employ more labor, consume cottonseed oil, rosin, silicate, and what not, and have more profits to distribute. The wealth of the nation is chiefly increased by creating new values through growing crops, bringing minerals from the earth, increasing the usefulness—and hence the value—of materials through manufacturing processes. In the manufacture of industrial raw materials such as chemicals, the greatest profits come through the upbuilding of our domestic industry, the augmentation of our national wealth.

WHERE we have chemical raw materials for which we are world's headquarters, like sulfur, borax, rosin, phosfate, etc., or where our output or our processes enable us to sell in any market on favorable terms such chemical products, carbon black, copper sulfate, lacquers, sulfate of ammonia, etc. foreign trade is a great asset. Our foreign trade should begin paradoxically by developing domestic markets to the utmost.

"Them's Harsh Words"

Two years ago one of our shrewdest and most conservative chemical industrialists wrote a report for a group of bankers interested in the re-organization of certain big fertilizer interest. Out of a life-long experience and after painstaking study he concluded:

"The so-called manufacturing operations of the American fertilizer industry (the mixing of natural plant food materials) yield a product that is essentially uneconomic whether judged by the raw materials employed in manufacture or by the results obtained on the farm. Furthermore, we have seen that their marketing methods, (both sales and deliveries,) and their financial set-up, (capitalization, pricing, and credits,) are both unsound. The whole industry, upon its present basis, is as obsolete as a stage coach line or an indigo plantation, and no financial salvage should be undertaken of any individual unit except after the frank admission that to successfully meet new conditions an entirely new and thoroughly chemical production must be undertaken."

This intensely interesting report did not end with this strident note of destructive criticism; but it went on to outline a chemical rehabilitation of this company's operations. Those recommendations, adopted as a part of the re-organization program, are to-day still confidential, for the two past years have justified this analysis of the fertilizer situation. A goodly number of fertilizer men, who two years ago would have hooted so dour a prophet off the platform, have listened attentively at the feet of critics just as outspoken. Nitrogen from the air to-day exceeds the output of nitrogen from nitrates and is sold at lower prices. More efficient processes than the treatment of phosphate rock with sulfuric acid are actually in operation. Highly concentrated chemical plant foods are on the market and have demonstrated their practical effectiveness. The fertilizer industry has been drawn into the whirlpool of the chemical revolution, and synthetic plant foods from strictly chemical sources are just as much as reality as chemical textiles and chemical varnish.

Plainly the fertilizer industry faces a hard period of painful readjustment. Unfortunately this comes at a time when, due to their marketing difficulties, they are not in that vigorous state of commercial health needed most sorely in meeting such changes. But against this disadvantage may be set the confident knowledge that their product is an essential whose market will increase as population grows and the natural soil fertility is more and more depleted. Most important of all, the fertilizer industry is awakening to the facts regarding its changed status; understanding more and more its new problems; feeling itself increasingly a part of the chemical industry. Four articles in this issue of CHEMICAL MARKETS are written by outstanding leaders of fertilizer thought to quicken this comprehension of the present and to turn the harsh words of past criticism into advice and inspiration for the future.

Health Hazards

As a group, the chemical industries have undoubtedly more problems connected with health hazards than most industrial enterprises. This is a condition long recognized, but becoming more acute during the past few years with the tremendous development of new processes, new products, as well as new working conditions. Not only are health hazards more numerous in chemical fields than elsewhere, but their results are more serious than in other industries both as regards the chemical wage scale and their effects upon the operating conditions of the industry through regulatory measures.

To-day few manufacturers in the chemical field are so blind to their own economic self interest, that they fail to recognize that high labor turn-over and high wages resulting from unsanitary or dangerous occupations cannot be tolerated. On the other hand the entire question of health hazard is involved with humanitian considerations and is most easily made a vehicle of propaganda on the part of those labor leaders and social workers who apparently hold to the old fashioned creed that whatever is good for the manufacturer is *ipso facto* bad for the worker and *vice versa*. The saner thinking element among both employers and workmen recognize that healthful working conditions are to their mutual advantage, and they also appreciate that with the rapidly changing condition of the chemical industry to-day, any regulations covering health hazards must be continually and carefully checked. It is quite as necessary to modernize old regulations to meet conditions as they exist to-day as it is to meet the new conditions with proper new regulations.

It is a matter of satisfaction therefore, that the New Jersey Commissioner of Labor, who held a hearing last month on the subject of hazards in the paint industry, has referred back to his committee for painstaking study the entire problems arising out of the use of benzol, methanol, and methyl acetone. It is high time that this particularly phase of

hazard should be most carefully studied and a model set of regulations drawn up to meet the conditions of present day formula and to-day's working conditions.

Old Customers

In such a jam of sales competition as we are in to-day, sales efforts are very naturally directed towards new business. On the face of it this is the quickest and easiest way of relieving the pressure and it is with a shock of surprise that one hears an important sales official of one of our big chemical companies quote from their carefully compiled sales statistics the following facts:

"We have been able to increase our sales volume during 1927 by a little better than 12 per cent. Nearly 70 per cent. of this increase has come from old customers and the most important feature to my mind of our last year's sales campaign was the fact that the total increase has been made possible chiefly due to the fact that we have had less than 5 per cent. loss of business from customers who were on our books two years ago."

In an industry with so many branches and selling chemicals it is quite impossible to set up average figures of any real meaning, but throughout all the branches of the chemical industry there are undoubtedly more sales executives who will envy that record than those who can boast of surpassing it.

These results carry the real lesson. The careful cultivation of old customers in an industrial field where buying is confined to necessary raw materials, as in the case of chemicals, plows the sales market two ways. It cuts down losses as well as increasing business and the slogan of this sales organization —"A carload lost to an old customer equals two carloads sold to a new customer"—is worth pasting on the inside cover of every chemical salesman's order book.

The approach of Spring brings to mind the activity which in former years marked the advent of the season in the insecticide field.

Bitter and costly experiences have somewhat stiffled the ardor of manufacturers of calcium arsenate. No longer do these manufacturers plunge into the production in anticipation of the ravages of the boll weevil, based on the pre-season reports of agricultural stations.

The experiences of four years ago are still vividly in the minds of those who were interested in the market—stocks were plentiful in all quarters; Southern warehouses were cluttered with supplies; dealers and brokers in the North were buying and selling in the hope of being favorably placed when the demand came; Southern cotton reports and Washington weather bulletins were eagerly scanned. Unfortunately the anticipated demand never materialized and more than one sleepless night paid tribute to the early season rashness.

More recent seasons have worked a radical change — undoubtedly for the better. Now the producers wait for proof in the substantial form of a real demand before bestirring themselves to manufacture articles whose present and future are almost entirely based on the whims of Nature.

In our travels around the trade we find that the "Presidential Year" hazard and dire predictions of our financial markets riding for a fall have not been taken too seriously by those who hold the purse strings of the buying world. While there are complaints of poor business, the consumation of a highly favorable contract season and sustained contract shipments would indicate that there is no serious slump in basis industries. While new and spot business is none too brisk, prices are not suffering as a result and there is no cause for pessimism.

Citing specific instances, caustic soda a recognized index of chemical business, is in a healthy condition; anhydrous ammonia is almost unavailable on spot as a result of large commitments, and other chemicals such as calcium chloride and copper sulfate, are moving towards a further increase in the annual demand which is again expected to exceed former years.

The International Nitrogen Conference will be launched at Venice on April 30.

In this instance "launched" is not a figure of speech, for when the representatives of the world's largest producers from England, France, Germany and Norway—no announcement has been forthcoming from recipients of invitations in this country—gather for their first meeting of the 1928 Conference, they will be aboard the S/S "Lutzow", steaming out onto the Adriatic.

The spirit of harmony which is expected to prevail should be materially assisted by this novel but attractive manner of conducting a conference.

They Say:——

"Out of the dreams of those prophets of the physical sciences who lived in the late eighteenth and early nineteenth centuries, men have built a mechanized social order, the reality and significance of which even we, the beneficiaries, do not fully comprehend. They could not possibly have foreseen our everyday conveniencies which have resulted from their pioneering efforts."—*Clarence G. Stoll.*

"There are many ways of supporting trade association research, each perhaps best suited to the industry represented, but where security is desired the independent establishment of the laboratory upon an adequate foundation seems to offer the best answer."—*Ind. and Eng. Chem., Feb. '28.*

"What both makers and users of bismuth salts require is a period of quietness, without fluctuations up or down. This may be, perhaps, too much to hope for with a metal such as bismuth, but a too restive market is good neither for the chemical industry nor trade."—*Chem. Trade Journal, Dec. 9, 1927.*

"The dramatic research work and the accomplishments of large concerns has somewhat tended to obscure the fact that science and the methods of science are the most democratic of all human instrumentalities, asking only to be used."—*Paper Trade Journal, 2-9-28.*

"In the long run the course of international commerce will be determined by economic factors and by the will of the people to make use of them. Artificial barriers can do little except to furnish temporary annoyance."—*John E. Teeple.*

"If this business shows such consistent progress, we know that the country that furnishes the market must also be making industrial and economic progress. One is conditioned upon the other."—*Wall Street Journal, 12-20-27.*

"Pure science is the basis of applied science. Industrial research is merely the application of the results of the search for new fundamental laws and substances."—*Herbert Hoover, in Textile World, 2-4-28.*

"No country in the world is as well governed as some of our great business institutions. Business has become the world's greatest benefactor."—*Paint, Oil and Chemical Review, 2-2-28.*

"The human mind has not yet reached the point where it recognizes that the gradual systematic making of changes is the one thing that has made civilization what it is."—*Charles F. Kettering.*

"We are learning that co-operation and united effort are necessary if our industry is to make progress, but beyond the desire for our own advancement, there is anelement of safety in co-operation which arms us against any inroads of other industries in this age of modern industrial competition."—*A. D. Graves.*

"Production of chemicals in the United States is now worth over two and a quarter billion dollars a year. This is an increase of 600 per cent. in a quarter of a century, and production is still going forward. These figures almost shout the story of American industrial progress."

"By intelligent and persevering constructive effort over a series of difficult years the American chemical industry has established itself as a self-contained and essential part in the industrial and economic fabric of this country."—*Herbert Hoover.*

"The Franco-German agreement is disadvantageous to America as far as it concerns conserves, fresh fruits, wood, hops, petrol, chemicals, metals, cements and leathers."—*Editorial in L'Ind. Chim., Nov. 1927.*

Ten Years Ago

(From "Drug and Chemical Markets" March 1918)

E. I. du Pont de Nemours & Co. reports for 1917, net profits of $49,112,952 or 16 per cent. on the $240,000,000 capital employed as against 11½ per cent. on the $51,500,000 of capital prior to the war. Company also reports recent acquisition of large interest in General Motors Corp. and Chevrolet Motor Co.

Monsanto Chemical Works purchases Commercial Acid Co. at reported price of $2,000,000 and announces consolidation of to incorporations into one company with $5,000,000 capital.

U. S. Industrial Alcohol Co. reports for 1917, largest earnings in its history amounting to $55.75 a share on common stock compared with $36 a share the previous year.

E. I. du Pont de Nemours Co. and National Aniline and Chemical Co. receive licenses to manufacture chemicals under German patents.

National Aniline and Chemical Co. reorganizes with William J. Matheson as president and chairman of the board.

Nichols Medal awarded to Dr. Treat B. Johnson, professor of organic chemistry, Yale University.

Croton Color & Chemical Co. incorporates with capital of $150,000.

Federal Dyestuff & Chemical Co. is in hands of receivers and plans reorganization.

Marden, Orth & Hastings Corp. obtains control of Calco Chemical Co.

War Industries Board fixes price of aluminum at 32 cents a pound.

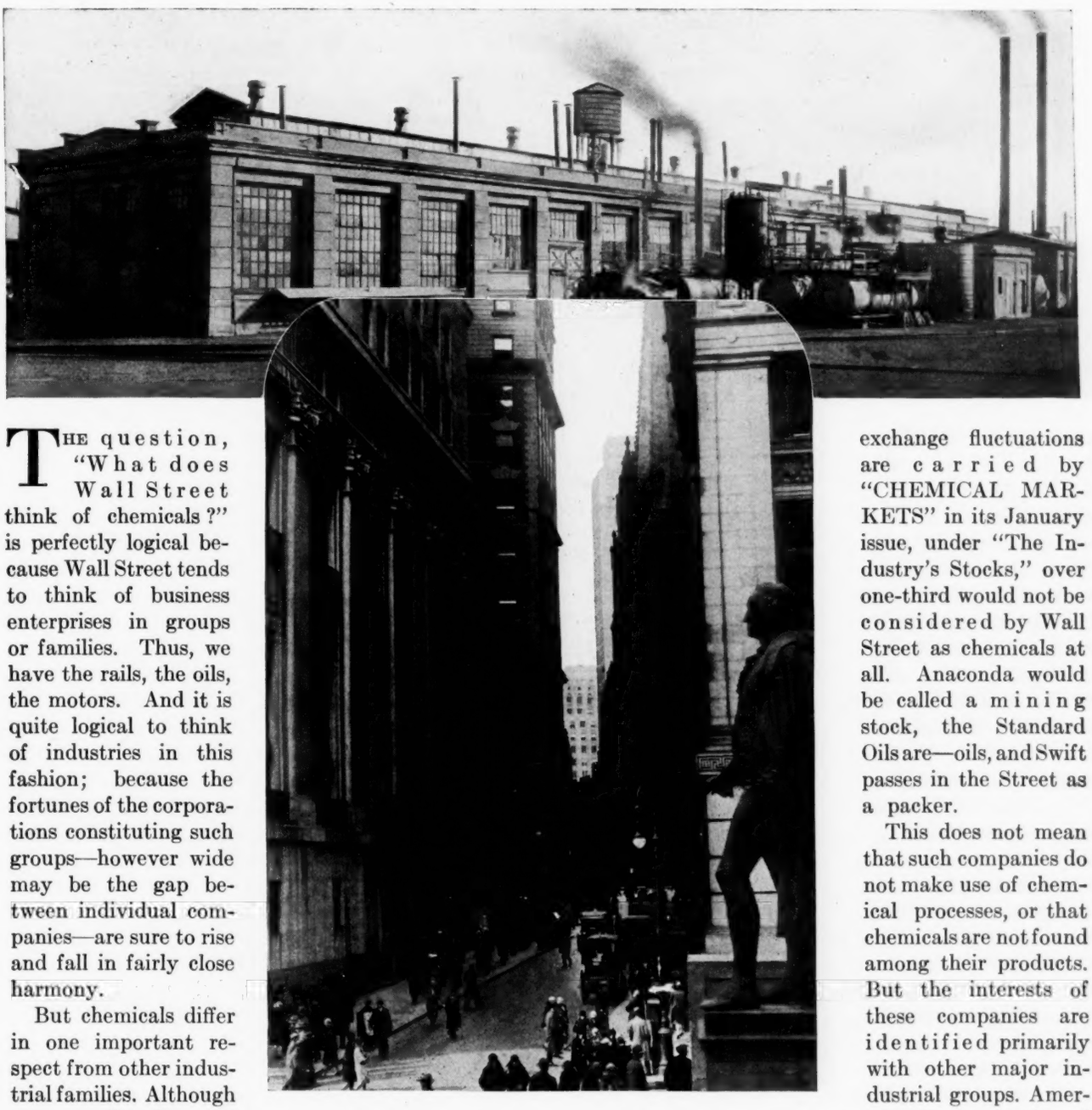
Stein, Hall & Co. incorporates with capital of $2,000,000.

Dyestuff Manufacturers' Association of America formed.

What Wall Street *Thinks of* Chemicals

By Robert C. Gillies

Statistical Department, Pynchon and Company



THE question, "What does Wall Street think of chemicals?" is perfectly logical because Wall Street tends to think of business enterprises in groups or families. Thus, we have the rails, the oils, the motors. And it is quite logical to think of industries in this fashion; because the fortunes of the corporations constituting such groups—however wide may be the gap between individual companies—are sure to rise and fall in fairly close harmony.

But chemicals differ in one important respect from other industrial families. Although some railroads still have coal mining interests and others operate hotels, it is known that when Wall Street talks of a "rail" the main business of the company in question is railroading. But what is a chemical?

Thus, out of nearly ninety companies whose stock exchange fluctuations are carried by "CHEMICAL MARKETS" in its January issue, under "The Industry's Stocks," over one-third would not be considered by Wall Street as chemicals at all. Anaconda would be called a mining stock, the Standard Oils are—oils, and Swift passes in the Street as a packer.

This does not mean that such companies do not make use of chemical processes, or that chemicals are not found among their products. But the interests of these companies are identified primarily with other major industrial groups. American Rayon is classed in financial circles as a textile, because its products are of a textile nature and must compete for public favor with older fabrics. We would probably exclude American Linseed also from the chemical group, because of its food products division. Both American

Linseed and Corn Products would be favorably affected by the same general market conditions that favor Postum, for example, rather than by those which would strengthen Commercial Solvents, or Texas Gulf Sulfur. Classification being a process to economize thinking, Wall Street, like other people, adopts that plan most convenient to its own point of view.

There is also the case of the du Pont Company. Personally, I would call this a chemical company; but its products are the most widely diversified of any industrial concern in the country and there are many who do not think of it primarily as a chemical enterprise. Its inclusion, of course, would strengthen the case of chemicals; although in 1927 nearly three-quarters of its income was derived from dividends of General Motors.

What Are "Chemicals"

I feel quite sure, however, that even with such companies left out Wall Street has no such definite conception of chemicals as it has of sugars, for instance. This is true not only because of the wide borderland shared by chemicals and other industries, but also because there are so many kinds of chemicals Fertilizer manufacturers, as one sub-group, are operating in a field distinct from industrial chemicals. Neither are the latter always closely affiliated market-wise, for makers of explosives can do a big business independent of whether bleaching agents are in wide demand or not. In fact, industrial alcohols have shown low earnings in the last two years, while acid producers were doing fairly well.

If the Street feels it necessary, therefore, when you demand what it thinks of chemicals, to ask in return what sort of chemicals you mean, it is because the territory covered by chemical manufacturers is so wide that there is nothing in the nature of a uniform demand for their products. The Street is thus unable to fashion after its own liking a homogeneous group for them.

As a result, the opinion of Wall Street about chemicals cannot be given in any succinct, integral form but must be partitioned in accordance with certain sub-divisions of the industry. It must also be pointed out that Wall Street, as a whole, is seldom in unanimity about anything for any length of time. The views expressed here are bound to be more or less the reflection of individual thought; and with this warning, I will proceed with the well-defined chemical sub-group, fertilizers.

Psychology and Fertilizers

More than two thirds of the fertilizer produced in the United States goes to the Southern states, which means that over one-third is used for cotton. The high price of cotton at the present is almost certain indication—judging farmer psychology as shown by experience—that there will be a large planting of the staple this Spring.

It is another peculiarity of farmer psychology that he buys more fertilizer when he is prosperous than when he is not. The temptation to let natural manures and the reserve fertility of the soil carry his crops over the "lean years" is too strong for him. The year 1927 generally enlarged rural purchasing power, and a good part of the increased earnings is sure to go into fertilizer for 1928 crops. There are also a number of lean years behind for the farmer to consider, when he was stinting on fertilizer; and the cumulative effect of past neglect will now be made up.

Be this as it may, the sales of fertilizer tax tags in December 1927 were half again as great as in December 1926; and the last five months of the year just closed showed an increase of one-sixth over the corresponding period of the year before. While not all these tags may be used promptly, they certainly indicate a strong increase in sales. Larger production for 1928, then, seems to be fairly assured.

While reductions in prices may stimulate sales, the opposite is true when buyers take the initiative; and the present demand for fertilizers appears to be an excellent example of the latter case. Higher price schedules have already been announced by manufacturers, and they expect to maintain them. In fact, much of the industry's troubles have been brought about by inter-company dissensions, which have at times been tantamount to actual trade war. Early last year the leading manufacturers adopted a code of trade practices, approved by the Federal Trade Commission. This should bring better feeling among producers all around.

What Worries Wall Street

Trade wars make Wall Street uneasy. Much of the loss in values registered by motor stocks since the beginning of the year has been caused by the "war" declared—and disclaimed in the same breath—by big manufacturers. If fertilizer men co-operate rationally in meeting the improved demand, they will not find it hard to gain the confidence of the Street.

While the foregoing discussion partakes too much of a short-time view, it must be remembered that the speculative element is more interested in fast turnovers and quick profits than in a larger gain which must await developments and is too dependent on contingencies.

But there is also comfort in the fertilizer situation for the investor who is willing to hold on for the "long pull." As more attention is given the research work of colleges and government experiment stations, and "scientific" farming comes more into vogue, the consumption of fertilizer is bound to increase. The encroachment of urban communities on the soil and the higher wages needed to secure and keep agricultural labor, all point to more intensive farming in the future than in the past. And intensive farming means

higher yields on fewer acres, which can only be secured by greater use of fertilizer.

In any event, there seem no good reason or even likelihood that the numerous fertilizer company losses of 1927 will not be reversed in 1928. Moreover the individual fertilizer concerns are in a good financial position to take advantage of better market conditions, a circumstance which is a little surprising after the long depression that has visited the industry.

Coming to industrial chemicals, it is found that the highly technical branches are almost entirely an outgrowth of the World War. It is safe to say that the output of the industry is worth twice what it was before the War, even at 1914 prices, and the ratio is much higher than this in the more highly specialized compounds.

Safe and Sure Demands

The significance to Wall Street of such facts is that it can scarcely accord chemicals the confidence it would show an older established industry. The Street wants to be sure that experimental stages are under control, that processes are not subject to constant change, that plant is adapted to output and properly co-ordinated. Such matters as knowledge of markets, and sound trade practices, are not to be acquired in a day. American ingenuity and adaptability go far, to be sure, in accelerating the process of "settling down." But the fact can not be dismissed lightly that America has added a huge plant for producing chemicals to the world's facilities. That foreign manufacturers are straining every means to regain their markets, and that they are aided by much longer tradition of technique and experience of markets, cannot be disregarded.

Securities of chemical companies are likely to be more vulnerable to "short" pressure and subject to wider fluctuations in market value on this account. The Street would also like to know whether the industry can maintain itself without excessive tariff support, so as to be independent of political developments.

It is true, of course, that some industrial chemical companies have not gone so extensively into the highly technical phases of production, and that many companies which have branched out in those directions have a "back log" of more staple products to help carry them along. Furthermore, the industry has so many points of contact with other businesses that it would be a very wide spread depression which held down the earnings of all chemicals. It is this very diversity, as already pointed out, that makes it difficult or impossible to map out a trend for chemicals in general.

Chemical Prospects

At present it happens that almost all chemical companies are facing improved prospects, with the gradual passing of the current business recession. The movement of heavy chemicals is already under acceleration, and should soon surpass the levels of a year ago. Tire and rubber goods will pass on to chemicals much of the improved earnings from the higher automobile production that is now taken for granted in 1928. Petroleum refining will require at least as much chemicals as in 1927. Production of industrial alcohol will be limited somewhat this year for the first time, by agreement with prohibition authorities; and higher prices are a possibility. The cost of the raw material, black strap molasses, on the other hand will be lower, so that profits should be fairly satisfactory.

The carbon black companies suffered production losses by the Mississippi flood last year, which they will probably escape in 1928. The long time contracts of the two big sulfur companies have practically run out, and these concerns should receive higher prices together with increased output. Competition is sharp in paints and varnishes, but here again increased demand is all in favor of the producers.

In short, most branches of the chemical industry are by fortunate coincidence in a good position to expand their net earnings in 1928, through higher production and the more efficient operation possible as plant capacity is more fully utilized.

Looking Ahead

Those members of the Street who like to take a long look ahead—and they are not a hopeless minority—have especial reason to favor investment in chemicals because of the new processes continually being discovered. Not only is there increasing production to look forward to along existing channels, but there are new markets to be created for products and methods as yet unknown but which are being evolved every day.

Thus the Vanadium Corporation is reported as about to enter upon an expansion in the chemical field which bids fair to change its designation from a metallurgical to a chemical concern. This company is to exploit new catalysts which it has discovered, for the benefit of the older members of the chemical family. It will not seek to entice their trade away. Rather it is creating an entirely new market of its own.

Chemicals are still in their infancy, comparatively speaking. There is no limit to their earning possibilities. If they maintain their progressive methods of research and continue to serve the country with new comforts and conveniences of life, they will find able support in America's main source of credit—Wall Street.

Proposed legislation in New Jersey which would practically prohibit use of benzol or menthanol in any paint material or paint remover is postponed until next session of legislature due to strenuos objections raised by manufacturers. Proposed bill would prohibit sale or use of paint materials containing in excess of one-half of one per cent. benzol or more than five per cent. methanol.

What The Chemist Thinks of Wall Street

By John E. Teeple

NOT that what he thinks of it has any tremendous importance, but since someone in the back seat has asked the question it might as well be answered. The chemist regards Wall Street much as he does Main Street. Each street is quite cock sure of itself, but probably neither is quite as pure, upright and infallible as it supposes nor quite as ignorant, intolerant and selfish as the other one considers it. A cross section of Main Street, of Wall Street, or of a group of lawyers or chemists would reveal much the same picture; some individuals good, some bad, a few intelligent, many mediocre, some unintelligent, some useful, many parasites, some destructive. No profession or class has a monopoly of the virtues or of the vices. Wall Street is probably just unassorted run of the mill stock the same as other groups.

In the popular mind Wall Street is a synonym for money; it is the den of the money trust, the haunt of malefactors of great wealth. Now the chemist has great respect for money, just as he has for coal, oil, T. N. T. or any other stored reserve of energy, because money represents such reserves and can be used to accumulate them. But we must distinguish carefully between the money and the man who controls it. The man must stand on his own merits and the control of money neither adds to nor detracts from his stature in the eyes of the chemist. The possession of wealth furnishes no clue to the intelligence of the owner, as unfortunately our institutions for the mentally infirm often testify; nor does the acquisition of money furnish any better clue, otherwise the Osage Indians would rank exceedingly high among our intelligentsia. Wealth may be in weak hands

or strong ones, wise or ignorant, good or bad. It is only a tool, a wonderful and powerful tool for some purposes if in the right hands; but the ownership of palette and brushes does not make a man an artist, nor does the control of wealth make one a financier. Money is a most valuable tool for certain purposes, but what would you think of a tool maker who spent his life and used his tools only in making more tools for his exlusive use.

Wall Street and Money Synonymous

We had to mention money because that comes first to mind when one mentions Wall Street. But the chemist does not regard Wall Street as a source of wealth, nor as an especially important depository of it. To him Wall Street is simply a market place, and his off-hand definition of its business would be "The manufacturing and marketing of Securities." On second thought, though, that definition must be changed. Maybe Wall Street does not manufacture the securities, and maybe we should use a little broader term than securities; some of the issues offered are not noted for their security. Let us say that Wall Street is the big market place for paper evidences of indebtedness and of participation in equities. If you buy one share of U. S. Steel common stock for investment at $150 then you have purchased about one seven-millionth of the equity in the U. S. Steel Corporation, and you consider the total equity of U. S. Steel in its property and business to be worth nearly $1,100,000,000 or, including its preferred stock and bond obligations, you think the property and business of U. S. Steel Corporation is worth around $2,000,000,000 and you are willing to pay for it at that rate. Someone else did not think it was worth that much to him or else you could not have bought it. Difference of opinion makes Wall Street as well as horse races. In the case of the chemist and the long time investor it is a difference of opinion as to values, i. e. earning power; the denizen of Wall Street, however, concerns himself more with what the insiders are doing, whether the market is oversold, whether brokers loans are rising, whether there may be a stock dividend or a split up of stock (as though that could change the earning power of the company, or as though two-twentieths of a business were somehow more valuable than one-tenth).

Wall Street The Market Place

Wall Street is a market place and as such it performs a very useful, in fact necessary function. In a market place you expect to find staple articles side by side with flashy trinkets, fresh fruits and wilted vegetables, and maybe decayed fish. *Caveat emptor*, which being translated means "The one who goes to market must know his onions." Of course in this Wall Street market there are some storekeepers to whom children can still safely go for the vegetables. Some of the storekeepers will honestly say to the innocents, "Yes, we have some International Bullion Bonanza, but it isn't very good to-day; it is just a little over ripe and you had better take a little American Telephone & Telegraph or Pennsylvania Railroad or General Motors Preferred, or a sound bond or two"; but the chemist understands that this is not generally being done now except by a few old fogey houses that have a mid-Victorian streak in their makeup and haven't kept up with the times. Wall Street is no place for babes, but neither is Fifth Avenue nor a department store nor Main Street. Times have changed since Hannah was young, and it takes a strongminded soul to go anywhere to-day, or even to stay at home or in his office without having something sold to him. He had no intention of buying and dimly wonders why he bought, but there the thing is. Selling has been greatly pepped up during the last fifty years. Of course we used to have Baxter Street and Hester Street and the Armenian stores where selling was a vigorous and vociferous operation, requiring both muscle and lung power, but in general selling was a passive occupation; the drummer travelled around and took orders, the merchant waited in his store and obsequiously offered the goods that were asked for, and the selling of securities was a very quiet, dignified and unobtrusive business. The Buyer was the strong personage in a trade, but now he is only the victim. When the superpower, go-getter salesman finishes with him he is only a name on the dotted line. Did the man need what was sold him ? Can he use it ? Did he want it ? Can he pay for it ? The questions are irrelevant and immaterial. Make the sale, make it on the installment plan, sell on margin, take his note, let him trade in his old one, or what have you; this is the spirit of business to-day, and on the whole it is a decided improvement over the passive methods of former years. Labor works harder and more efficiently in America than anywhere else; it must, to keep ahead of the installment collector. Of course I suppose someone must pay for the upkeep and fuel for all these high pressure salesmen; I wonder who it is.

The Financial Machine at Work

Now Wall Street has developed nearly all the new sales strategy and tactics and brought the whole to perfection. It is a pleasure and a delight to the eye to watch the Wall Street machine function. It takes four lemons and one sweet orange and merges them, then sells it to the public as First and Refunding Bonds. Six weeks later it is sold to the public again as Preferred Stock, then as a special favor the public is allowed to buy some Common Stock. Then Holding Companies are organized to take over more Common Stock, and their Bonds, Preferred and Common Stock are offered. When the machine has finished the four lemons and one orange are very completely and thoroughly sold. Now understand none of this is said in the way of malice or criticism. The chemist's emotions are admiration and envy, deep jade green envy, and regret that chemicals can-

not be sold that way, or at least that we cannot organize such an efficient machine to do it. Suppose, for example, our sulfuric acid makers compare notes and find 500,000 tons excess acid in stock with demand light. Picture them going to Mr. Morgan and associates who underwrite the 500,000 ton issue and distribute it to the participating houses. On a certain day the descriptive circular of the issue is prepared. The inside pages are devoted to a letter from Mr. Joshua Sauerstoff, the President, who gives a short history of sulfuric acid, its importance in industry, the growth of the acid business, and a table of statistics showing that since 1922 our 66° Beaume sulfuric acid has averaged 93% H_2SO_4. We begin with 1922 because 1921 was a pretty bad year and the figures would not look so good. On the front page our participating house repeats the President's figures and recommends the issue. Messrs. Pencil Pusher & Co., Accountants, certify that the additions and subtractions are correct, and Messrs. Pecksniff & Pipkin, Attorneys, think that the transaction will get by without anyone being convicted of larceny. Then don't forget the very fine print at the bottom of the page where the participating house speaks in a whisper, "Being very gullible we believe all this stuff because somebody told us, but we don't guarantee anything, and in fact we have not said anything to induce anyone to buy." Maybe the material isn't good sulfuric acid, maybe it isn't up to strength, maybe it isn't sulfuric acid at all; *caveat emptor*. If one could only sell chemicals that way, but buyers of chemicals are spoiled; they become terribly peevish if goods fail to meet certain definite specifications, and haughtily demand reliable goods or money back. We weakly submit, we haven't the nerve to say "We are awfully sorry that last lot didn't turn out to be sulfuric acid, but those things will happen sometimes. Try some of our debenture soda ash, it may turn out to be nickel or platinum or something very valuable." We have much to learn from Wall Street sales methods, but probably our chance of applying their methods is already ruined.

Stalking the Quarry

To complete our picture, on a certain day telephones all over the city ring with very private and personal calls, and at a given signal the fair haired boys from Williams and Yale march down the steps in serried ranks like ushers in a movie palace and go forth to mop up. The next morning advertisements of the 500,000 ton sulfuric acid issue appear in the papers with the legend "As the issue is already oversubscribed this advertisment appears as a matter of record only." This can't be real though; it is probably only a picture made at Hollywood.

Electric utilities, water powers, general public utilities, many public services, municipals, chain stores, and other standardized operations are well handled here. Some houses even specialize in organizing, constructing, financing, managing the business and marketing the securities in narrow fields of industry, and do them all well.

Another grand institution of Wall Street is the brokerage house.

Brokerage House a "Grand Institution"

The chemical broker was once quite a personage but he is passing away—nobody loves him any more. But the Wall Street broker liveth on the fat of the land and waxeth great—at least on 3,000,000 share days. If you know what you want to do the Wall Street broker will take an order to buy or sell any security at any price and will execute the order promptly for a very reasonable commission, if it can be done at all. That is a very important and necessary service to the community. If you don't happen to know just what you want to do but simply desire some action for your money go to the broker just the same. When you finish you will have had the action. This function of providing action for money is also very necessary, now that horse racing is not legal here and Canfield's no longer flourishes, and stuss is frowned upon. In most respects the brokerage house can be made an adequate substitute for the horse race. You will find the touts there and the red hot tips straight from the stable—pardon me, the director's room—the clockers and exponents of form, charts of past performances, weather reports from the track, "Raining, track muddy, brokers loans up, car loadings down, pig iron production 54%, unfilled steel orders off 50,000 tons, chromium dividend scratched." There is no lack of advice. You may have Gabby's selections for one dollar a day or Inandouter's for one hundred dollars for the season, or your broker's for nothing. Possibly your broker's advice isn't entirely disinterested because he wins every time you buy or sell, no matter whether you win, lose or draw. Just put up your ante, throw out your chest and help the ballyhoo along by slipping the news to your friends. "My brokers advise me to sell Consolidated Pickle B and go long on Elastic Rivet convertible preferred." One-third of your hearers rushes to follow the tips, another third rushes to copper them on general principles, and the third grins. All but the last help to make an active market and nice sleek brokers. Don't make the mistake of trying to inform yourself fully on the present, past and probable future of any business—oh yes, each stock quite often represents a real definite business which must collect money, meet its debts and pay bills just like the local fish market or the Chinese laundry, but if you stop to think about that you will only delay the market. Make your selections just like a woman picks a car, then go back to your regular business and earn some more money. Some day Wall Street will become progressive and put in the parimutuels—maybe.

If there is a note of flippancy or a trace of levity in all this discussion it does not concern the serious work

(*Continued on page 348*)

Economics *of the* Fertilizer Industry

By John J. Watson

President, International Agricultural Corporation

In discussing the subject of economics in our industry, if we look back over its past history we would be forced to discuss a story of uneconomic conditions practiced in an industry. To consider its sound economics we can only venture to hope for improved methods as in its adopted Code of Trade Practices, which if lived up to will put our industry on a sound basis, and if not, and we fall back into the old practices, can bring nothing but ruination to it.

The large profits which were made in the early days of the industry permitted unreasonable business risks to be taken and brought about keen competition. As an inducement to get orders for early deliveries it became the practice to guarantee that the prices on such fertilizer as was delivered early would be as low as any prices quoted by a reputable manufacturer during the entire shipping season. This practice lent itself to many abuses, resulting in all fertilizer being sold and settled for at the lowest price quoted in any section of the country by any fertilizer company. Goods were sold, but it was never known by the seller the price he was to collect for his product.

The Curse of Credits

The use of fertilizer being new in this country, to influence the farmer to adopt its use it became necessary to sell him fertilizer on credit, to be paid for after the crop was harvested and sold. Fertilizer compounds must be made and raw materials purchased months in advance of the planting season in order that the mixed fertilizer may become conditioned in time for its use in the field, so his outlay of capital commenced months before the plant-season and was tied up until the crop was harvested, and if the crop was a failure and the farmer did not realize enough to pay his bills the fertilizer manufacturer was forced to carry over the account for another year and to supply the farmer on credit with additional fertilizer with which to raise another crop.

The keenness of competition brought about an unnecessary number of analyses. Because the various plant food contents in mixed fertilizer were guaranteed, and under control by inspection of the various State Agricultural Departments, the analysis of goods of one company was regarded as having the same plant food value as the similar analysis of another company, it became the practice of selling many unnecesasry analyses in an endeavor to mystify the buyer, and to get some slight price advantage. Undoubtedly if sound economics were adopted the requirements of all crops and soils could be met by the elimination of at least three out of every four analyses of fertilizers now made and at a great reduction in cost per unit of plant food to the farmer.

Quality and Price

The keen competition in prices has unfortunately made many dealers and farmers believe that there is no difference in quality between the same analysis goods made by the various manufacturers. There is, however, just as much difference for example between an 8-3-3 grade of one company's product from another as there is in various makes of shoes, clothing, flour, bread, etc. The farmer must be educated to realize this and he will soon find that the fifty cents to a dollar per ton saved on the cost price of a ton of fertilizer is nothing to him in comparison with the satisfaction he will have at harvest time if he procures and uses the product of a company whose reputation to make a quality that we knew would give satisfaction at harvest time and to demand a fair price for it. Out of several thousand of such questionnaires that were sent out to farmers there was not a single answer that came back that advised us to of putting out quality goods is beyond question.

A cartoonist's thoughts on the farm problem. The three menaces pictured are quite adept at upsetting the calculations of our farm experts.

In one of the years of greatest price competition in the industry our Company sent out questionnaires to its customers asking their opinion of our policy, we having decided to make quality goods irrespective of price; in other words, not trying to make a quality that would fit a cut price, but

reduce our quality to meet cut prices, but all desired that the quality be kept up even though we had to charge more for such goods than the regular quoted price.

Freights and Costs

Because of the low prices per ton at which fertilizer is sold, its bulkiness and the high percentage that freight bears in the total cost of each ton delivered to the farmer, good business judgment should determine that deliveries from factories should be as far as possible, confined in their adjacent territory where the lowest freight delivery cost per ton prevails. This would greatly reduce the delivery cost per ton, which eventually has to be paid by the farmer.

The large additional cost charged for goods sold on time as against the cash price is brought about by the unsound attempt to try to make an added banking profit out of the fertilizer business. The National and State Banks with the assistance of the Federal Reserve System, the Federal Land Banks, the Joint Stock Land Banks and the Intermediate Credit Banks, offer to the dealers and farmers facilities for borrowing, which if availed of would enable them to buy for cash at a much lower interest cost to them than the manufacturing corporations can afford to charge for the same accommodation. If the farmer or dealer cannot procure credit from the source of the Federal and State banking facilities at his disposal certainly his credit risk is too poor for a manufacturing corporation to assume, and because those who have been in charge of a large part of the fertilizer industry for many years have grown up in this practice of long credits, it is no reason why with the banking facilities now available that the practice should not now be departed from.

The Value of Cash

The idea that farmers cannot raise cash to pay their fertilizer bills is entirely wrong—the farmers of our country are the largest customers of the mail order houses. They buy from these houses on a strictly cash basis with check accompanying their order. Their reason for doing so is because they can buy cheaper from them than from any other source, and the reason the Mail Order Houses can sell for lower prices in because they have no bad debt losses, no interest to pay because they do not sell on time and do not carry accounts, consequently they have no credit or collection expenses. The farmers' purchases from the mail order houses are often times not for necessities or essentials, while their purchases of fertilizers constitute one of their most important and necessary requirements, and certainly if they can raise cash for non-essentials they can raise cash for essentials.

Much must be done in an educational way in the use of fertilizer. Our industry is in a rapidly changing state, higher analysis goods must be used—our Company was the first to advocate the use of multiple

(*Continued on page 344*)

Who's Who In Chemical Industry

Carlisle, Paul Johnson, head chemical research department, Niagara Falls plant, Roessler & Hasslacher Chemical Company. Born, Shelbyville, Ind., 21 Mar., 1887; Mar.: Wiola Norene Palmer, Harbor Springs, Mich., 12 July, 1915; children: 1 dau.; educat., Indiana Univ., A. B., 1913, A. M., 1914. Brown-Smith Battery Co., Bloomington, Inc., chem., 1911-14; Prescott Ariz. high school. instr, chem. & physics, 1914-16; R. & H. Chem. Co., 1916 to date, res. chem. N. J. plant, 1916-18; dept. head, W. Va. plant, 1919-21; asst. wks. mgr. Calif plant, 1921-26; head chem. res. dept. Niagara Falls plant, 1926 to date. Member Phi Beta Kappa, 1913. Hobbies: sports in general. Address: Roessler & Hasslacher Chemical Co., 26th st. & Buffalo ave., Niagara Falls, N. Y.

Dean, Carlton Miles, department head, Merrimac Chemical Company. Born, Lowell, Mass., 18 Nov., 1895; mar., Christine A. Danforth, Salem, Mass., Jan. 10, 1926; educat., Mass. Inst. Tech., B. S., 1917. Merrimac Chem. Co., 1917 to date; supt. Sulfuric Acid, Bisulfite Soda & Alum depts. Capt., Chem. Warfare—res. Memb., Amer. Chem. Soc., Amer. Inst. Chem. Engrs. Clubs: Towanda, (Woburn). Hobbies: books, bridge. Address: Merrimac Chemical Co., Woburn, Mass.

Delahanty, Thomas Washington, assistant chief, Chemical Division, Department of Commerce. Born, New York City, 19 Feb., 1892; mar., Mary C. Bergin, Washington, D. C., 11 June, 1927; educat., Cornell Univ., B. Ch., 1917. J. E. McGolrick, mgr., chem. broker; Dicks, David Co., trading dept. mgr.; consulting engr. Insp. powder & explosives, U. S. Ordinance Dept., 1917. Lt. U. S. N. Air Service, 1918. Publications: German Dyestuffs Industry, Coal-tar dye situation in the calf leather tanning industry in U. S. and Europe, Chemical Trade in Japan. Memb., Racquet Club. Hobbies: travel, social service work. Address: Department of Commerce Chemical Div., Washington, D. C.

Hazen, Myron S. American Agricultural Chem. Co., pres. Coe-Mortimer Co.; v. p., Bowker Fertilizer Co.; v. p., Bowker Chemical Co., Boston. Born: Springfield, Mass., 16 Sept., 1886. Educat: Mass. Agri. Coll. B. S., 1910. Mar.: Dorothea Halleberg, Brooklyn, N. Y., 19 Aug., 1916. Bus.: entire bus. life spent with American Agricultural Chem. Co. its subsidiaries and associated companies. Mem.: Kappa Sigma Fraternity. Hobby: farming.

Huntington, W. D. v. p. Davison Chemical Co., Baltimore. Born: Sandusky, Ohio, 19 April, 1874. Educat.: Sandusky H. S.; Oberlin Coll. Mar.: Ola Craig Gibbons, 4 June, 1903. Children: two Bus.: H. C. Huntington, 1895 to beginning of Spanish-American War; secy. & sales mgr. Jarecki Chem. Co., 1899-1903; sales mgr., Buffalo Fertilizer Co. 1903-09; mgr. northern plants, International Agricultural Corp., Buffalo, 1909-15; v. p. Davison Chemical Co. 1915 to date; v. p. Silica Gel Corp., v. p. Eastern Cotton Oil Co.; v. p. Alliance Fertilizer Co.; pres. Colloidal Products Co. Public Record: Served 13 months in army during Spanish-American War; Chairman of Acid Com., War Industries Board, during World War, Mem.: Nat'l. Fertilizer Assn. (pres. 1918-20); Clubs: Maryland, Baltimore Country, Press, Gibson Island, Drug & Chemical, (N. Y.) Hobby: golf.

Wemple, Holland Russell sales mgr., Texas Gulf Sulphur Co., New York. Born: Waverly, Ill., Mar. 1892. Educat.: Mass. Inst. of Technology B. S., 1913. Mar.: Margaret C. Rice, Fitchburg, Mass., 1 Nov., 1915. Bus.: Riter Conley Mfg. Co., Pittsburgh, 1913; Research Lab., American Sheet & Tin Plate Co., Pittsburgh, 1914; Wemple Bros. Bank, 1915-17; Texas Gulf Sulphur Co., 1919 to date. Public Record: Lieut. Chem. Warfare Service, U. S. A., 1917-19. Mem.: Sigma Chi, Engineers' Country Club, Canadian Club of N. Y. Hobby: golf.

CHARLES H. MACDOWELL

forecasts the economic future of

CHEMICAL FERTILIZERS

INDUSTRIAL chemists and chemical engineers have wrought a revolution in the production of concentrated fertilizers and fertilizer materials which is of deep interest and concern to both chemical and fertilizer manufacturers. They have made technically possible the manufacture on a large scale of fertilizer salts containing from 50% to 80% of plant foods—nitrogen (N_2) phosphoric acid (P_2O_5) and potash (K_2O). The I. G. of Germany is actually selling in world markets materials which contain, for instance, 15% N_2, 30% P_2O_5 and 15% K_2O. Urea containing 45.5% nitrogen, mono-ammonium phosphate containing about 11.5% nitrogen and 58% phosphoric acid and di-ammonium phosphate with about 20% nitrogen and 50% phosphoric acid are also available in commercial quantities.

The advent of such materials has raised a number of questions both agronomic and economic which must be answered before the use of these concentrated fertilizers can become very general.

Founder of the Armour Fertilizer Works; chemical advisor to the American Peace Commissioners at Versailles; head of the round table on fertilizer raw materials at the Williamstown Institute of Politics in 1926; past president of the Fertilizer Manufacturers' Association, Mr. MacDowell speaks as one having authority, and to the point, on a subject of increasing importance to all chemical interests.

First and foremost, everything else being equal, will their use decrease the cost of plant food applied on the American farm ?

Will plant food in a highly purified and concentrated state be as productive in results as present day materials or do the incidental carriers and impurities occurring in our present fertilizer mixtures contribute to their effectiveness ?

Can the present means of distribution on the farm be used with concentrated fertilizers, or must a new technique be developed for their use ?

Can organic nitrogen be wholly dispensed with ?

To appreciate the present status of the fertilizer industry in the United States something must be known of its development. Originally the industry was based on the use of bone (either as such or acidulated to produce soluble phosphates) and industrial wastes, particularly from slaughter houses. Some Peruvian guano was imported which contained all three fertilizer ingredients in limited amounts. After the discovery of phosphate rock in the south this material rapidly replaced bones as the main source of phosphate and it became almost a universal practice to acidulate the rock with sulfuric acid to render the phosphate available in the form of super-phosphate (16-18% P_2O_5). Chile saltpeter (sodium nitrate) (15% N_2) was imported and used as an inorganic source of nitrogen. Increasingly large amounts of low grade potash salts such as kainite (12-14% K_2O) and manure salts (20% K_2O) were brought in from Germany as well as some muriate and sulfate of potash (50% K_2O). Then as the gas and by-product coking industries became more extensive sulfate of ammonia (20% N_2) became increasingly important as a fertilizer material.

The necessity for handling large tonnages of low grade materials and for using sulfuric acid in large amounts tended to establish fertilizer plants at many points to serve, in each case, the locality in which the plant was situated. The shipping radius was restricted by freight rates on finished goods. The larger plants made their own sulfuric acid. The main reliance for materials was still on super-phosphate and organic ammonites such as slaughter-house tankage, dried blood, cottonseed meal, fish scrap, etc. The formulas which could be made from these materials were relatively low and so the average total plant food content rarely exceeded 14%. Such formulas as 1 (NH_3) 8 (P_2O_5) 1(K_2O), 2-8-2 and 2-10-2 were in demand. The inorganic nitrogen salts, sodium nitrate and ammonium sulfate, gradually were used in increasing amounts particularly since the cost of the good organic ammoniates increased rapidly owing to demand for them for feed-stuffs. To-day only the off-grade tankage, blood and cottonseed meal get into the fertilizer industry and then at a cost for nitrogen almost twice that for inorganic forms.

Owing to advances in the technology of making acid phosphate which produced a physically better

and somewhat higher analysis material and the increasing use of high grade inorganic salts the manufacturer could have produced a higher analysis fertilizer. However, the demand was for low grade goods and the producer did not at first stimulate the use of higher grade fertilizer but met the demand by adding to his mixtures inert material, known as filler, to reduce the analysis to that required by the formula.

The economic fallacy of such procedure, however, has dawned upon the industry. Not only does the filler itself cost money, but its use entails expenses for bags, freights, labor, overhead and storage both to the producer and the farmer. The progressive manufacturer, to-day, advocates the use and bends his efforts toward the sale of high grade- goods such as 7-11-10, 4-16-4 and 5-15-5. These formulas can be made with present-day low-price, high-grade materials at an appreciable saving both to the consumer and manufacturer. One ton of 4-16-4 costs the farmer considerably less than two tons of 2-8-2 and yet it contains the same amount of plant food and can be handled just as satisfactorily by his distributing machinery and at less cost. To raise the formulas much higher, at present, would require the use of the more expensive concentrated materials with a consequent increase in cost per unit of plant food on the farm. When these concentrated materials approach more nearly in cost the present high-grade materials they can and will be used more extensively. There is an economic balance, as well as an agronomic one, which determines the proper type of fertilizer. Under present conditions and according to present knowledge, the high-grade formulas now offered by the American manufacturer are the cheapest and the most effective the farmer can obtain.

In the early days of the industry organic nitrogenous material was one of the main-stays. A tradition, therefore, has grown up that a complete fertilizer should have some organic nitrogen as well as nitrate and ammoniacal nitrogen. Organic material, aside from its plant food content, is particularly effective in influencing the physical condition of the soil and in this lies the great value of natural manures. However, the amount of organics which reach the the soil in any fertilizer in the quantities normally used per acre is far too small to effect materially the physical condition. The organic fertilizer materials are therefore essentially nitrogen carriers.

In the soil, to be effective, the organic material must be decomposed by nitrifying bacteria so that the nitrogen passes normally through an ammoniacal state to an oxidized form of nitrogen before absorption by the plant. Among the soil population, however, besides nitrifying inhabitants, are often bacteria which decompose organic material with the liberation of free nitrogen that is lost to the plant. The high-grade highly-available forms of organic nitrogen are far more expensive than the inorganic ammonia salts and nitrates and probably no more effective as fertilizers. The low-grade low-available forms such as garbage tankage, peat, etc., are relatively ineffective as nitrogen carriers and serve as little better than fillers in fertilizers. Certain organic ammoniates such as off-grade animal tankage, blood and cotton seed meal, synthetic tankages from leather, felt and city sewerage, tobacco waste, fish scrap, etc., will continue to be used to meet local conditions and special needs. But the tendency to replace expensive organic nitrogen with the cheaper higher-grade inorganic forms is developing in present day practise, with the resultant production of higher-analysis, quicker acting more effective fertilizers.

The Cost of Nitrogen

Nitrogen is the most expensive fertilizer ingredient and its use is limited by its price. There is no doubt that much more nitrogen could and should be used than is now the practise. Even at present prices its more extensive use on the farm would, under most circumstances, pay. The price of inorganic nitrogen has been gradually declining and with the present prospect in this country of extensive development of synthetic ammonia production from atmospheric nitrogen, the price is likely to decline even further in the future with a corresponding increase in use. Recent European practise has shown that on permanent pasture-lands remarkable results have been obtained, both in butter and beef production, by following an early season application of complete fertilizers with frequent subsequent applications of nitrogen as urea or in ammoniacal form. From this the United States has a lesson to learn. More intensive farming on fewer acres, with the extra fields developed into rich pasturage should lead to greater profits on the farms. Only by the liberal use of fertilizers, both on crop and pasture, is this possible.

Although the nitrate form of nitrogen commands a premium in price over ammoniacal nitrogen, it probably will continue to be used in definite amounts in fertilizers. The agronomist is convinced that the nitrate acts intensively and quickly while the ammonia salt acts extensively or over a longer period. The ideal fertilizer, therefore, contains both forms—the nitrate to give the young plant a good start and the ammonia to furnish nitrogen during the early growing season. Much nitrogen at the time of fruition is detrimental. Our main source of nitrate nitrogen is sodium nitrate imported from Chile where it is mined. Air nitrogen products, however, such as luena saltpeter (a double salt of ammonium sulfate and ammonium nitrate containing a quarter of its nitrogen in oxidized form) and calcium nitrate are growing in favor.

Other Plant-Food Elements

Although nitrogen, phosphorus, and potassium are recognized as the three essential plant foods, other elements such as calcium, sulfur, iron, silica, manganese, boron, magnesium, etc., are required in greater or less amounts for the healthy development of plants.

Some of these apparently act as catalysts in the plant economy and need be present only in minute amounts. A deficiency of them in the soil is often evident in the plants, which, like animals, are subject to deficiency diseases.

Agronomists, to-day, are actively investigating the role of these secondary nutrients in plants. Present day high-grade fertilizers, ordinarily, from the nature of their source contain most of these secondary nutrients in varying amounts, and probably derive some of their effectiveness from the presence of these elements. On the other hand the highly refined and practically pure concentrated fertilizer salts do not contain these secondary elements. If the concentrated materials are to be used direct, additions should be made to them to assure the presence of the necessary secondary group, thus adding to the cost of already high cost materials.

Limits to Concentration

But there are to-day, practical difficulties on the farm militating against the direct use of concentrated fertilizers. They cannot be distributed satisfactorily by the present farm machinery, and if concentrated fertilizers are to be used, the design of present day machinery must be modified radically. The United States Department of Agriculture is investigating this factor and making extensive experiments on the direct application and use of concentrated fertilizers. Much harm can be done to the seed or young plant by too great concentration of soluble salts in their vicinity. The problem is to distribute the concentrated materials uniformly and in sufficiently small amounts to preclude any harm to the plants.

Make Haste Slowly

The past development of the fertilizer industry then, has brought about the establishment of plants in many localities. The larger of these are complete in themselves, manufacturing their own sulfuric acid, acidulating phosphate rock, and producing to-day high-grade fertilizers meeting the special requirements of their respective neighborhoods. These fertilizers are manufactured mainly from naturally occurring, or by-product materials brought into the plants from the four corners of the earth. The plants are efficiently operated at a low cost. To compete with them, from an economic standpoint, concentrated fertilizers manufactured in large plants at distant points must be quickly laid down on the farm at the same cost per unit of plant food. This time is not yet here, though it may not be far distant. But if the economic hurdle is soon surmounted, there still remains the agronomic doubts which must be settled, and the mechanical problems involved in their distribution on the farm. Neither of these, however, probably presents insuperable barriers. In the use of very concentrated fertilizers, however, we should "make haste slowly."

Science and Sales

Carbon dioxide may be completely purified by a new apparatus placed on the market by Sutcliffe, Speakman and Co. Ltd. Carbon dioxide given off from brewer's vats, used for general aeration, often has an unpleasant "tang" or taste due to the presence of amyl alcohol. If this gas is compressed to about 250 lb. pressure, cooled, dried, and then passed through the apparatus, which in the standard form is a small high pressure steel container having a deep bed of specially activated carbon, the latter at once removes the taste by absorbing the impurity, leaving an absolutely clean and pure carbon dioxide. The carbon bed, when saturated, may be heated, to drive off the impurities and then used again. It may be said to last almost indefinitely.—*Chemical Age, 1-14-28.*

A new waterproof and rustproof coating, the chief constituents of which are rubber, and bitumen dissolved in benzol, is known as "Tillit." Some added ingredients cause it to dry rapidly, giving a hard flexible surface. The bitumen is subjected to an artificial oxidation before dissolving, and is then combined with rubber by a special heating process. The oxidation removes the sulfur and secures unlimited durability, and the combination with rubber gives flexibility and adherence power.—*Industrial Gas, 2-28.*

Sulfite and lumber refuse from the manufacture of chemical pulp may be used profitably, by an improved distilling method which makes the residue easily absorbable in sawdust, wood shavings and the like. The mixture thus obtained is easily dried and then shaped into briquettes, or powdered for industrial fuel purposes. It is said to burn more easily than coal with a short flame, no smoke, and no slag residue.—*Paper Trade Journal, 2-2-28.*

In an effort to get away from inhalation anaesthetics the Germans have discovered three new ones producing narcosis by intestines, blood circulation and spinal cord—Averton (tribromal alcohol), Pernokton (related to veronal), and Lumbalanesthesia. (*Ind. and Eng. Chem., Oct. 1927*).

A new rosin product has been developed by the Acme Products Co., Ind. This "Solros" is easily dissolved and may be used the same as other rosins, but it will not crystallize from solution, remaining perfectly soluble.—*Paper Trade Journal, 2-2-28.*

A new alloy, Negnalium, said to be three times as strong as iron and as light as aluminum, has been brought to this country by its inventor, Dr. Max Wurbach, Professor of Metallurgy, University of Munich.

PHOSPHATE ROCK

The Crux of the Fertilizer Problem

By H. D. Ruhm

Whether the American fertilizer industry shall be turned from mixing plant food materials they do not manufacture into chemical production of chemical fertilizers — or not — the sole natural fertilizer raw material found in industrial quantities in this country is always to be a basic factor of vital concern, and the radical views of this experienced phosphate mining operator are as provocative of debate as they are stimulating of thought.

THE causes of the constant downward tendency of fertilizer stocks has been discussed by many, but it seems to the writer that none have gone to what in his opinion, formed from over thirty years experience, is the crux of the situation.

In the first place the great industry, which, in the 75 years since Von Leibig's discoveries gave it birth, has grown to such large proportions, has never in fact been an actual chemical manufacturing industry, except for making sulfuric acid and producing acid phosphate, and the latter is only wet mixing of sulfuric acid and ground phosphate rock. All the rest is dry mixture of acid phosphate and various purchased materials, which contain nitrogen and potash, none of which are manufactured by the industry. Recent enormous tonnages of by-product sulfuric acid added to the excess capacity of sulfuric acid makers developed by the war, have radical economic changes in even sulfuric acid manufacture by most of the industry.

Therefore, the industry has in fact become a mixing and selling industry and the larger manufacturers have occupied the anomalous position of fighting long and hard against development of small dry mixing plants either by commercial firms or farmer's cooperative bureaus, and then in the last analysis competing desperately to sell raw materials to these same small plants and even to direct users.

This has caused more price difficulty than is blameable on the much advertised condition of the farmers. How little real reflection of the farmer's condition, outside of the cotton raiser, is obtained from the condition of the fertilizer industry is shown by the fact that of the seven million tons of fertilizer produced in the United States, at least ⅔ is used under cotton and of the remainder 70% is used under special crops such as, tobacco, potatoes, and truck farming. This leaves less than one million tons being used by the corn and wheat and oats and hay farmer, who cultivates some 400,000,000 acres in the United States, of which not over ten million acres has any fertilizer used on it.

It is claimed that the corn, wheat, oats and hay farmer can't ever get enough for his crops to enable him to come out even, if he buys complete commercial fertilizer to grow them and at the same time restore enough of these elements to maintain a fertile soil. To do this he must utilize leguminous plants, like the clovers, to take nitrogen from the air and store it in their stalks and roots together with the mineral phosphorus and potash existing in the soil in form unavailable to the ordinary plant, but made so by these marvelous soil builders. By such means, if all the plant residues and manure and other waste products of farm crops are constantly returned to the soil, the supply of potash in all ordinary cultivated land in the United States is practically inexhaustible for the ordinary crops.

However, the nitrogen, calcium and phosphorus must be supplied or the land finally wears out and will produce no more. With the legumes to take nitrogen from the God-given air, the mission of the fertilizer industry to the plain ordinary farmer mentioned is to supply him with phosphorus and calcium.

Based on their thirty years experience, large farmers in Illinois, Iowa and other great states in the corn belt, claim that the cheapest form of this calcium and phosphorus is in a small amount of ordinary ground limestone to relieve the acidity where that is too great, and in liberal applications of finely ground, cleanly washed phosphate rock, containing twice as much phosphorus as acid phosphate, always at less cost and frequently at one-half the cost. Unfortunately the large manufacturers of fertilizers saw in phosphate rock no possibilities except as a raw material from which to make acid phosphate, and their main effort has been in every way to reduce the price of phosphate rock, in order to make their acid phosphate more cheaply, at the same time fighting in every way its direct application to the soil.

Beginning with the discovery of the Florida phosphate deposits in 1888, and increasingly since the

discovery of Tennessee phosphates in 1893, the large fertilizer manufacturers have gone deeper into the ownership of their own phosphate rock deposits, so that the mining of phosphate rock in this country, except for a pitifully few producers, who are solely miners, has become merely an adjunct of the fertilizer business and controlled by the line of thought based on its consideration only as a raw material.

From this viewpoint arose the strenuous fight and opposition of the whole fertilizer industry against

The washer to which ore is delivered from the mines and subjected to a washing process.

any farmer ever using the raw ground rock direct on his soil. However, in order to reduce their own costs, these manufacturing miners had to produce huge tonnages to absorb the overhead, which any mining engineer knows must be absorbed by tonnage or the cost is prohibitive. With this tonnage in hand, the surplus must be sold. If normal prices yielding a profit above mining and preparation and depletion and overhead are maintained, naturally the competing manufacturers who have no mines would buy from independent miners, who have no factories.

This led to selling by the manufacturing miners at such prices as to keep the independent miner in a submissive state of hunger, if not actual starvation.

A reserve outlet was vouchsafed for the enormous rock tonnages of these manufacturing miners in the European market, which readily consumed nearly two of the three million tons of phosphate rock produced, and gave to the phosphate mining departments of the large fertilizer manufacturers, profits which made their dividends and earning power so great that their stocks and bonds were savings banks investments for widows' and orphans' funds.

Meantime, the non-mining manufacturers grew and flourished on the cheap raw material, thus furnished them by their big competitors, so that there are now more independent non-mining fertilizer manufacturers than existed when most all of those then in existence were merged into one or the other of the great aggregations of capital known in the industry as the "big six."

No such exhibition of industrial altruism has ever before been known, but the independent phosphate miner has been taught his place at any rate.

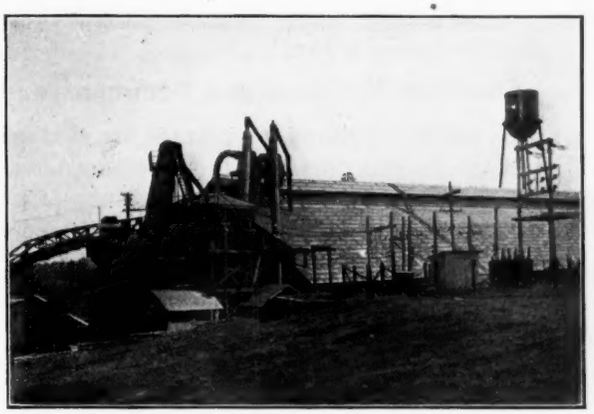
The first cloud on the sky of the "big six" came when in 1914 the European war stopped the export of phosphate rock and disaster was only prevented then by practically all of their production or contract purchases of sulfuric acid being turned into war munitions with such enormous profits.

With the growth of the idea that the American farmer must feed the world and supply its cotton, the domestic consumption of phosphate rock increased until in 1918 and 1919 it had nearly reached the prewar figures of production then in 1919, Europe again became able to take and pay for rock so that 1919 and 1920 saw the highest pinnacles reached by the securities of the phosphate-mining-fertilizer corporations, and more widows and orphans invested then ever before. It is well to note that whereas in 1900 a price of $4.00 to $5.00 per ton charged by the independent miners for rock caused the biggest influx of manufacturers into the business of "rolling their own," the price of rock in 1920 reached the astounding figures of $18.00 per ton and no one could produce enough.

But the "deflation" of 1920 curtailed domestic consumption; and in the meantime Europe was beginning to draw its main supply from Christmas and other Pacific Islands and from the enormous French development of phosphate mines in Morocco. Accordingly the widows and orphans investments melted away like snow in the summer's sun.

The last to feel the troubles of the industry are of course the non-mining manufacturers, and while a great deal of noise has been heard from them they had no troubles except from their own and the big fellows cut-throat competition.

Meantime the great tonnage of phosphate which would be used by good farmers to keep good land



Grinding and storage plant in which final processes in preparation for shipment are made.

fertile and who do not buy either acid phosphate or commercial fertilizer has been kept down. Partly this is due to the real inability of ordinary farmers to buy much of anything, but mostly to the influence against the direct use of raw rock continually brought to bear by the fertilizer trade in general and the big fellows in particular. The altruistic anomaly continues of the mining manufacturers going deeper and deeper into the red because of the low price at which they sell the

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Foreign Cartels *and* American Industry

By Col. William J. Donovan[1]

Assistant to the U. S. Attorney General

YOU are already informed of the economic and particularly the chemical features of the cartel movement abroad. You recognize that the growth of cartels, as well as combinations and governmental monopolies, is part of the current industrial development of the European continent. It is not my purpose to enter into that phase of the discussion. My endeavor will be simply to indicate the view of the Department of Justice concerning its duty towards the operation of these combinations, monopolies, and cartels within the field limited by our laws.

In considering the obligation of the Department in relation to these activities, it is essential that we have as our point of departure the organic law on which the authority of the Federal Government is based. The power of Congress to regulate commerce, out of which is derived the right to enact so-called anti-trust statutes, is found in Article I, Section VIII of the Federal Constitution. That Section provides that Congress shall have power "To regulate commerce with foreign nations and among the several States, and with the Indian tribes."

Sherman Act Regulates Commerce

It was under the authority granted by that provision of the Constitution that the Sherman Act was passed. That Act is the primary statute of this country regulating its foreign and interstate commerce. It is declaratory of our national policy in dealing with centralization of power in our commercial and industrial development.

In its substantive features the Sherman law is divided into parts. Section 1 forbids every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations. Section 2 forbids monopolies, or attempts to monopolize, in such trade or commerce. The Act does not undertake specifically to enumerate particular forbidden restraints. Since its enactment, however, the Supreme Court in various decisions has interpreted its purpose and defined its scope.

So that from the Act itself, as well as the decisions, a philosophy of the relation that should exist between business and government, has been evolved. That philosophy is based on practical experience rather than on mere abstraction, and in its application certain limitations and exceptions have been recognized. The Supreme Court has pointed out that, whether the existence of competition is a wholesome thing for trade and commerce or not, it nevertheless is the settled law of this country that competition shall exist. The Court has asserted that the public convenience and welfare demand that the natural lines of competition be left undistrubed and that the control of prices through combination tends to restraint of trade and monopoly, and is an evil thing. The law recognizes, however, that competition may be carried to an extreme; that it may be destructive; that it may generate evils. Those consolidations which seek only to secure the advantages that come through economical management, and do not aim to dominate the particular industry, Congress and the Courts recognize as proper, and even necessary, in our industrial development.

Our policy, then, is based on the principle of competition. That principle includes the ideas of equal, opportunity, maintenance of individual initiative, freedom from governmental regulation, and absence of power to control prices or allot territory or customers. In that respect it differs from the Continental theory, which allows not only combination of industrial units, but permits the existence of monopoly under close governmental supervision, with power to limit production, allot territory, assign customers, and fix prices.

No Amendment Necessary

It is because of the tendency of the European chemical industry to organize cartels and combinations with power to regulate prices, production, markets, and exports, that certain representatives of your industry and others have felt impelled to call for the amendment of our anti-trust laws, so that combinations similar to European combinations may be developed, in order that the threatened competition from abroad may be more readily resisted.

It would seem that those who urge such amendments to our laws—amendments permitting combinations in industry resulting in monopoly—forget

1 Address before American Chemical Industry Conference, Washington, D. C., February 16, 1928.

the historical, inevitable result of such a tendency. It would mean that the people of this country would not permit monopolistic power to go unregulated. If your industry is permitted to attain that extent of centralization which results in elimination of competition, the people of the country, for their own protection, would insist that there should be greater governmental supervision and control. So that those among you who, because of fear of foreign competition, grow panicky and urge what is, in effect, a surrender to the Continental principle of trade ought to pause and consider whether or not there is not greater opportunity for more effective and unhampered development of your industry under our existing laws.

Let us consider, then, the protective measures enacted by Congress which meet the challenge of foreign monopolies and cartels. It is important that this situation be clarified.

Status of Foreign Monopolies

Within its own jurisdiction a foreign government may, of course, evolve a trade policy that is directly opposed to our own. If as a result of that policy there is established a governmentally controlled monopoly, and that monopoly comes to our shores to engage in trade, and conforms with our laws, we cannot deny such monopoly the right to do business here. We cannot attack the origin of that concern and assert that, because in its inception it was a monopoly, we can, therefore, deny it right of entry to this country.

But a different situation is presented when a foreign monopoly comes into our jurisdiction and attempts to perform those acts which are forbidden under our law. It is the belief of the Department of Justice that, when a foreign monopoly, though legal in its place of origin, comes into this country, and, by collusion with our citizens, enters into agreements here for the restraint of trade and the enhancement of prices, those agreements are just as illegal, and just as much subject to our laws, as they would be if the corporations and individuals involved themselves were creatures of our government. And we believe that it does not constitute a defense to assert that, although the acts here were illegal, they have been insulated and immunized by the fact that the acts performed abroad were legal under the laws of a foreign government.

And the basis for that contention is found in the anti-trust provisions of the Wilson Tariff Act, which was enacted in 1894. Although passed in that year, its provisions were never invoked until two years ago, and were not passed upon and interpreted by the Supreme Court until 1927. That Act deals specifically with the importation of goods. It provides that every contract between two or more persons or corporations, either of whom is engaged in importing any article from any foreign country, is illegal and void if it is intended to operate in restraint of trade, or designed to increase the market prices in the United States, of any article imported or intended to be imported.

In the discussion in Congress at the time of its adoption the reasons for its enactment was clearly brought out. Those in charge of the bill stated that the only way to exclude foreign trusts from this country was by direct and positive legislation, preventing such trusts from entering into combinations with capital which would enable the importer to control prices and to monopolize the market. The law was based, as disclosed in debate, upon the principle of preventive justice; that by penalties imposed upon their transactions objectionable combinations would be prevented from imposing heavy burdens upon those who must consume the imported articles.

So far as it presently appears, the so-called chemical entente and the Franco-German dyestuffs agreement appear to involve no attempt to exploit this market. In fact, we have authentic assurances that these arrangements are *not* directed against this market. In order, however, to illustrate what I am trying to explain, let us suppose that the dyestuffs agreement is directed toward the exploitation of this market at the expense of our consumers. Let us assume that it is agreed by the German I. G., on the one hand, and the French Kuhlmann interests, on the other hand, that they will participate in American sales on a 50-50 basis. A central selling agency is established. The exploitation is carried on through the agency of American citizens and with the assistance of American banks. American dyestuffs manufacturers are bought out or they agree not to undersell the foreign factors. In our judgment, this hypothetical statement presents a clear violation of law on this soil, and, not only the American citizens, but the foreign companies and their officials could be held for a violation of law.

Foreign Governments Equally Liable

Now, that is our conception of the law. I ought to say to you, however, that there is a similar case before the courts at this moment. In that case our view has been questioned, because the parties include a corporation in which a foreign government has a stock interest. The principle is, that no sovereign can be sued without its consent; but the exemption of a sovereign rests only upon the practice of comity, or upon international etiquette or courtesy. It is asserted, however, that, because the majority of the stock of the foreign corporation is owned by a foreign government, the corporation is an instrumentality of the government and is entitled to the same immunity as the sovereign itself. We believe that, when a government voluntarily enters into a commercial enterprise, it cannot claim immunity for the corporation which it controls; it cannot detract from the independence and dignity of the nation which was hospitable to its corporation, and cannot deprive that nation of jurisdiction over corporations in its own territory by making those corporations public agencies. We insist our anti-trust laws must be enforced in our

own territory to the same extent as any of our laws, whether or not these laws are in harmony with the policy of other nations.

The above summation presents briefly what might be considered the defensive measures against illegal attacks by foreign monopolies, conbinations, and controls. But there is affirmative legislation which gives our industries the opportunity to do business in those markets where the law differs from our own and where those interested would be at a disadvantage unless they were permitted to have the same sort of trade organization as their competitors.

On April 10, 1918, the Webb Export Trade Act was enacted. This Act came as the result of an extensive investigation and report made by the Federal Trade Commission on the conditions of American export trade. The Commission concluded that American exporters were at a great disadvantage in competing with European exporters because the Americans were under the disability of complying with the rule of competition laid down by the Sherman Act. It was recommended that American exporters be permitted to unite in associations so that they might present a solid front against foreign competition. This legislation relates exclusively to export trade of the United States, just as the anti-trust provision of the Wilson Tariff Act related to the import trade of the United States. The Webb Export Trade Act, otherwise known as the Webb-Pomerene Act, is a recognition of the fact that, in regions where anti-trust laws are not in force. American business men should be able to compete on a favorable basis with foreign cartels, controls, and monopolies. Before this Act was passed it was believed that our anti-trust laws were not applicable to these export trade associations, but it was felt that, even if that were true, all element of doubt should be removed by affirmative legislation.

Webb-Pomerene Act Explained

The Act provides that the anti-trust laws shall not be construed to prohibit associations entered into for the sole purpose of engaging in export trade and actually engaged in such export trade. It provides, further, that agreements made or acts done in the course of such trade are not in violation of the Sherman Law, if these agreements or acts do not constitute a restraint of trade within the United States, and provided that such associations do not, in the United States or elsewhere, enter into any agreements which artifically or intentionally enhance or depress prices within the United States or substantially lessen competition within the United States. The Federal Trade Commission has a visitorial jurisdiction to regulate these export trade associations.

The report of the Federal Trade Commission for last year is interesting in that it shows the activity of our export associations in shipping raw material and manufactured goods. From that report it appears that fifty-five associations filed reports during the past fiscal year. Exports totalling more than $200,000,000 were handled by export associations during 1926, and you will note particularly that chemical products, including caustic soda, soda ash, liquid chlorine, soda pulp, paints and varnishes, totalled $3,100,000 and raw materials, such as phosphate rock, crude sulfur, etc., amounted to $14,300,000.

The Federal Trade Commission stated in its report that export associations reported many advantages derived from operation under the Act. Through their association, member companies were able to reduce selling costs. Effective standardization was obtained. Quality of products was improved. Prices were stabilized. Cut-throat competition was eliminated. And a solid front to European competition could be presented.

Now, there is another phase of the current European industrial development that bears on the interests of consumers in this country. It frequently happens that raw materials controlled by foreign governments are produced or sold under conditions making it impossible for purchasers competing with one another to secure adequate supplies at a reasonable price. In fact, we have seen instances where such materials are produced under a definite governmental plan to restrict production and to enhance prices.

An Actual Demonstration

A vivid illustration is found in the so-called Stephenson Plan governing the sale of crude rubber. Under the operation of that plan the individual American purchaser was under the absolute domination of foreign interests. In order to meet that situation, the purchasers of crude rubber in this country, which consumes 75% of the world's supply, submitted a plan to the Department for the formation of a rubber pool, which, by consolidating purchasing power, would enable buyers to go into the rubber market and obtain supplies at a fair price. It is the view of the Department that so long as that association of rubber purchasers permits all who wish to participate to do so on equal terms, and, in view of the fact that the purpose of the plan is to promote trade in this country rather than to restrain it, there is no violation of the Sherman law and no basis for proceedings by the Department of Justice. It may be interesting to note that during the operation of this plan the price of rubber has been substantially reduced, and there has been no complaint of its operation in this country, except in one case, which upon investigation was found to have no merit.

Collective Purchasing Bill

A bill expressly sanctioning collective purchasing of raw materials in foreign markets has been introduced in the form of an amendment to the Webb-Pomerene Act. It provides that such associations shall enter into no agreement or understanding which artificially or intentionally enhances prices or results in discrimination in the sale of commodities so imported

(*Continued on page 350*)

Economic Aspects *of the* Fertilizer Future

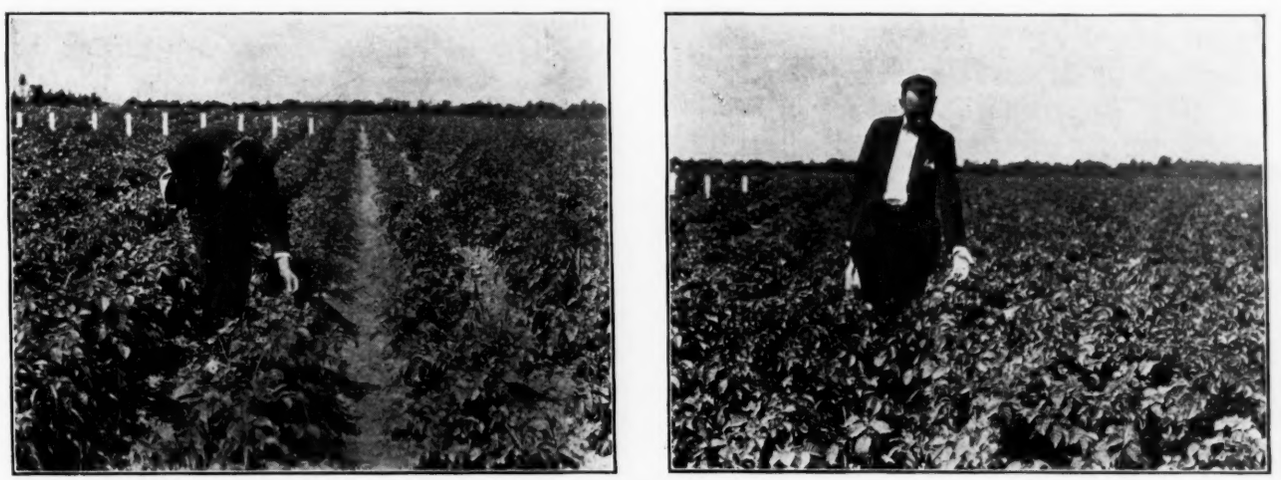
By R. O. E. Davis

Bureau of Chemistry and Soils, U. S. Dept. of Agriculture

IN a study of American agriculture, O. E. Baker has pointed out that improved land per capita increased to a maximum in the period 1880 to 1890 of 5.7 acres and since then has gradually diminished to 4.8 acres in 1920, while the food production per capita increased to a maximum in 1900 of the equivalent of 49 bushels of wheat. Since then a gradual decrease to 45 bushels in 1920 has taken place. Food consumption did not increase so rapidly, and for the last 20 years remained about the same. Estimates of our population near the end of the twentieth century place it around 180,000,000. To meet such food and clothing demands will involve efficient utilization of land, and fertilizers must play an important part.

True, our total crop area is much less than the area capable of being used for crop production, nevertheless practically all of the good arable land is now included in the crop area. Instead of putting new land into crop production, it becomes necessary to continue the permanent use of the land now producing and to meet the increasing demands from its production. This means better and more efficient use of the land units,* or increasing the production per acre of land.

Higher prices for land and higher wages for labor in the future, will demand the more efficient farming; methods will be insistent and increased yields per acre will be obtained. As an indication of what may be expected comparison may be made with several European countries. Table 1 shows the yields for wheat and potatoes the average consumption of fertilizer per cultivated acre. This table shows the principal European countries using considerably more fertilizer than this country. It is also interesting to note that larger yields are obtained in the countries using larger amounts of fertilizers. It must be remembered that the use of machinery is not so extensive in Europe, hence the production per man is much greater in the United States. While differences in total average yields cannot be taken as due entirely to differences in amounts of fertilizer applied as other factors influence the yields, there is a close correlation between amounts of fertilizer applied and crop yields.



Increases of 75 to 100 bushels of potatoes per acre are not exceptional, in fact, the U. S. Department of Agriculture reports average increases of 81 bushels per acre for six experiments run for three years. These photos show unfertilized potatoes in Wisconsin (at left) and the adjoining plot which received a 5-8-7 fertilizer.

An interesting comparison between amounts of fertilizer used and amounts of crop yield is shown in the case of cotton. The three states in this country using the largest amounts of fertilizers are North and South Carolina and Georgia, and over one-half of the fertilizer used is applied to the cotton crop. In Figure 1 are shown curves for the tons of fertilizer used in these states from 1912 to 1925 and for the bales of cotton produced by them over the same period. These curves probably indicate a closer correlation than actually exists because of other factors acting in the same direction as fertilizers. Considerable fertilizer is used on other crops than cotton. Also the change in acreage employed in growing cotton and the effect of a large crop in reducing the acreage and in curtailing the purchase of fertilizers are factors influencing these relations. The advent of the boll weevil has caused a reduction in acreage used for cotton, especially in Georgia, and this factor changes the relation between cotton production and fertilizer consumption. The curves show a close similarity, but it must be remembered that part of this similarity is due to the other factors mentioned in total cotton production.

Factors Increasing Production

Many factors enter into increased yield of crops, but the methods used may be divided into those which may not increase the cost per unit of land and those that do increase the unit cost. Under the first class may be listed better adaptation of crops to soil types, rotation of crops, and the use of improved varieties; and under the second class, methods of weed control, better preparation of soil and cultivation of crop, and the use of fertilizers. In efficient farming use will be made of each of these methods and those methods that do not increase the cost are the ones first employed but the others will be used under pressure for greater efficiency. The ones involving the direct expenditure of money, such as fertilizer, must demonstrate their value before they will be employed. In other words, the cost of fertilizer is of real concern to the practical farmer.

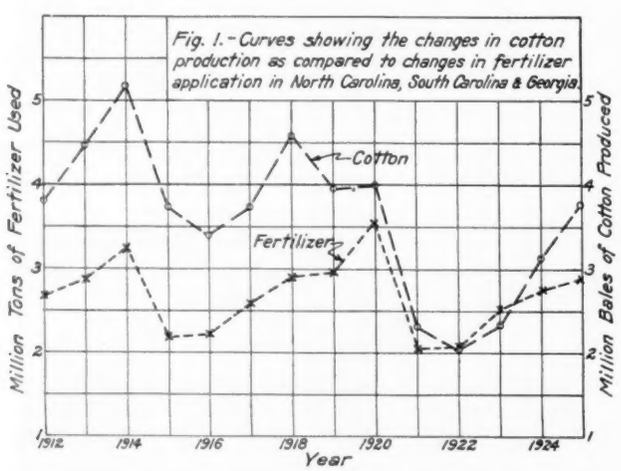
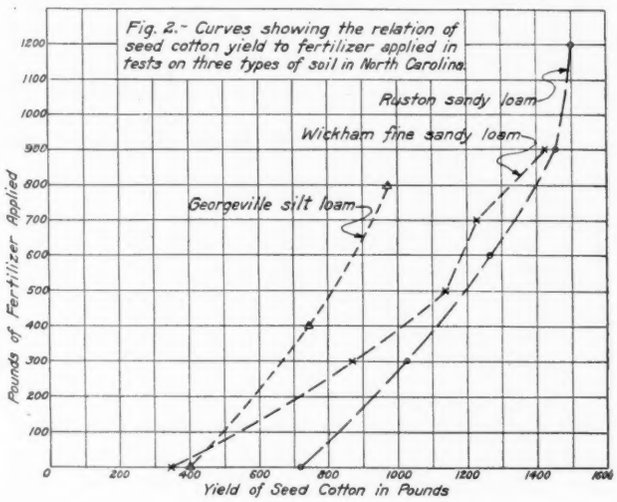


Fig. 1.- Curves showing the changes in cotton production as compared to changes in fertilizer application in North Carolina, South Carolina & Georgia.

From earliest times it has been customary to use certain materials as soil amendments to increase soil fertility. Most of these were waste products and their efficiency had been determined purely by practical means. Such materials as scraps of meat, crop residues, bones, fish, manure, ashes, soot and lime were used by the ancients, but the reason for their action in increasing plant yields was not understood. Not until late in the eighteenth or early in the nineteenth century, when chemistry was attracting much attention was the subject of plant nutrition investigated. Finally, it was concluded that of all the elements necessary for plant life, there were but three that would have to be supplied to the soil in general; the others were found to be supplied in adequate amounts from most soils. These three essential elements are those carried in ordinary fertilizers, nitrogen, phosphorus and potash. It was found that with continuous growing of crops and their removal from the soil, the yield of crops gradually diminished. But when these three elements were added to the soil, the production was increased and could be maintained at the higher value with continued additions from year to year. This discovery and the location of natural deposits of nitrates, phosphates and potash resulted in the introduction of commercial fertilizers. While there are still many questions regarding the function of these elements in plant nutrition, the fact remains that their addition to the soil usually results in increasing crop yields.


Pounds of Fertilizer Applied
Ruston sandy loam
Wickham fine sandy loam
Georgeville silt loam
Yield of Seed Cotton in Pounds
Fig. 2.- Curves showing the relation of seed cotton yield to fertilizer applied in tests on three types of soil in North Carolina.

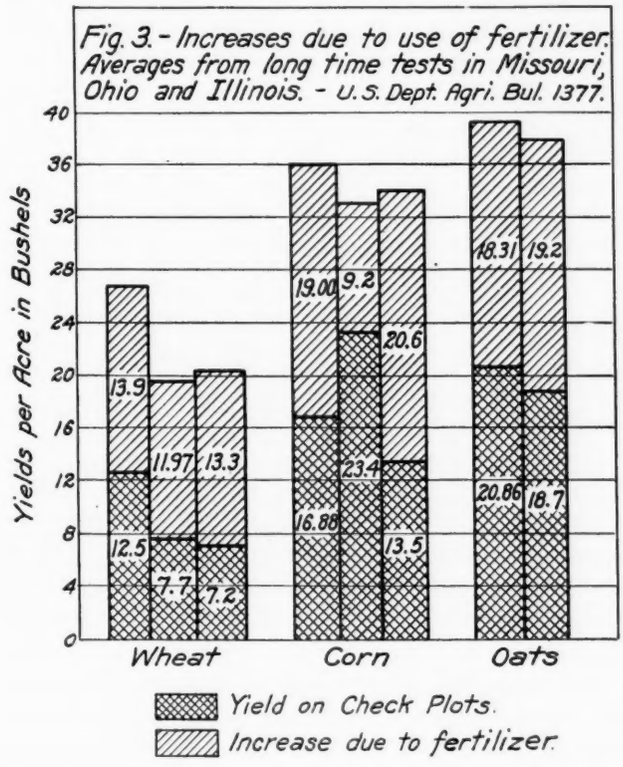
Maintenance of Soil Fertility

The losses of these elements from cultivated soils are enormous through leaching and drainage alone. In addition, crops removed from a soil carry with them the elements taken from the soil. Dr. J. G. Lipman, Director of the N. J. Experiment Station, has estimated that the average loss per acre from land under staple crops is about 50 pounds of nitrogen, 5 pounds of phosphorus and 25 pounds of potassium. The response from the use of fertilizers is immediate. While the return to the soil of these three elements through commercial fertilizers rarely equals the amounts removed, the response by crops is very

marked in the increased yields obtained. The essential economic fact is that for the maintenance of crop production it is necessary to add these elements to the soil so that they become available to the growing plant.

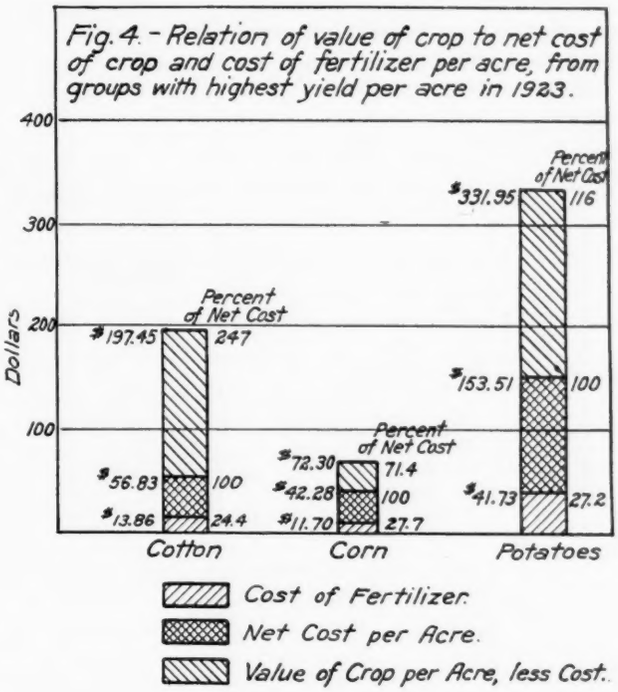
Sources of Fertilizer Materials

The materials entering into fertilizers have been collected from many sources. Nitrogen has been supplied from Chilean nitrate, from ammonium sulfate from coke ovens, from fish scrap along the Atlantic littoral, from garbage tankage of various population centers, from refuse of slaughter houses, from cottonseed meal of the South, and other minor sources. Phosphate rock has come from Florida principally, shipped to fertilizer centers such as Boston, Baltimore, Norfolk and made into superphosphate and redistributed. Potash has come from Germany and France principally, as soluble salts and to less extent from certain industrial by-products. In the manufacture of mixed fertilizers these materials have been collected from the various widely distributed sources, mixed in the factory and distributed to the farmer. The expense involved in paying



freight on these materials to and from the factory has been considerable.

Since the world war, there has entered a condition that is changing the character of the fertilizer business; that is, the fixation of nitrogen of the air in products suitable for fertilizer use. With commercial development of nitrogen fixation and the production of combined nitrogen in large quantities, the possibility of manufacturing materials for fertilizers with a much higher concentration of plant food elements has been recognized. With the availability of such compounds as ammonium phosphate, potassium phosphate, ammonium nitrate, potassium nitrate and urea, fertilizer mixtures of very high concentration may be prepared. The manufacture of such concentrated materials presents the advantage of reducing the handling and transportation charges very greatly and enables the shipment of fertilizers over greater distances. The limited supply of by-product materials and the diversion of organic ammoniates into feed



stuffs are factors tending toward the manufacture of more concentrated material, a tendency already manifesting itself in the higher analysis goods of recent years, so that more dependable sources and larger supplies may be available with the growing future demands.

Production and Costs

As already pointed out, one of the methods of increasing unit production is by fertilizers, but their employment means also increasing the unit cost per acre of the crop. The one inevitable dictum of the farmer then is that fertilizer must pay its cost plus a profit. The type of soil, the variety of plant, the climate and soil condition and even the composition of the fertilizer used all influence the increase realized by the application of fertilizers, so that the difficulty of evaluating the increase even under the best controlled conditions becomes evident. Attention can be given to only a few experiments of the many performed indicating increased production from the use of fertilizers. In the Bulletin of the North Carolina Department of Agriculture, September, 1924, are given results obtained in that state co-operating with

the U. S. Department of Agriculture. After determining the most suitable fertilizer composition for the crop and soil under observation, the yields obtained by varying the amounts of fertilizer applied were determined. Curves constructed from the data given in this bulletin are shown in figure 2. These show increases almost proportional to the amount of fertilizer applied, but somewhat diminishing increases with the largest applications.

TABLE 1

Amounts of Fertilizer Used by Several Countries and Yields Obtained*

Country	*Fertilizer 1920 Pounds per acre*	*Wheat 1921-25* Bu. per acre*	*Potatoes 1921-25* Bu. per acre*
United States	35	13.8	106.9
Italy	49	17.1	78.4
France	89	21.5	125.1
Denmark	152	44.4	224.6
United Kingdom	178	35.3	207.3
Germany	202	27.3	187.6
Holland	574	42.4	340.8

*Data from U. S. Department of Agriculture Yearbook, 1926 and Bureau of Agriculture Economics.

In an analysis of the relation of crop rotation to soil productivity Weir has collected data of long-time experiments from which the effect of fertilizers in increasing crop production is clearly brought out. Results obtained on experimental plots at stations in Missouri, Ohio and Illinois are shown in the chart in figure 3. Increases with wheat from fertilizer application were 13.9, 11.97 and 13.3 bushels as averages over a number of years. Similarly, three different experiments on corn showed increases of 19.00, 9.2 and 20.6 bushels and two experiments on oats of 18.31 and 19.2 bushels. These tests covered 13 years at Illinois, 24 years at Ohio and 29 years at Missouri.

It is not sufficient that fertilizers increase yield per acre; they must show the farmer increase in profits. Of course there are conditions under which no profit may be realized, no matter if fertilizers are employed. The absence of sufficient rainfall, the uncontrolled ravages of insect pests, improperly selected crop or unsuitable soil, and even on occasion a very low price for the crop, may so outbalance the use of fertilizer that its effect is diminished or lost. Under conditions suitable for the normal growth of crops, there is overwhelming evidence that the use of fertilizers will show a profit. This can be illustrated by data published in the U. S. Department of Agriculture Yearbook, 1924, on costs of crop production. This information obtained from questionnaires sent out to farmers, is shown in tables 2 to 5, inclusive, giving data on cotton, potatoes, corn and wheat. The tables are arranged in the order of yield groups, and in each of these it will be seen that in the lowest yield groups, where little fertilizer was used, the cost of production exceeded the value of the crop, but with increasing amounts of fertilizer the value of crop exceeded costs of production.

TABLE 2

Cost of Producing Cotton as Related to Cost of Fertilizers Used. Compiled from Data Collected from Farmers*

Yield Groups lb. lint per acre	*Yield per acre in lbs.*	*Fertilizer cost per acre*	*Total cost per acre*	*Net cost lint per lb.*	*Value of lint per acre*	*Cost of fertilizer as % total cost per acre*	*Cost of fertilizer as % of value per acre*
20 lb. and under	14	$2.94	$21.09	$1.45	$4.28	13.9	68.8
21- 60	44	4.25	26.96	.56	13.32	15.8	31.9
61-100	89	3.97	29.91	.30	26.55	16.6	15.5
101-140	124	3.39	32.52	.22	36.48	10.4	9.3
141-180	161	3.55	34.30	.17	47.73	10.3	7.4
181-220	200	4.48	38.77	.16	60.29	11.4	7.4
221-260	245	5.04	42.33	.13	72.60	11.9	6.9
261-300	290	6.27	47.24	.12	87.77	13.2	7.2
301-340	324	9.03	58.29	.14	95.34	15.5	9.5
341-380	356	8.75	55.40	.12	107.14	15.8	8.2
381-420	401	10.41	59.35	.11	124.22	17.5	8.4
421-460	444	9.99	64.76	.11	132.63	15.4	7.5
461-500	495	9.73	67.01	.10	150.42	14.5	6.5
Over 500	618	13.86	83.00	.09	197.45	16.7	7.0

*Data from cost of production statistics, 1923. U. S. Department Yearbook, 1924.

Labor and Land Efficiency

The efficiency of fertilizer in returning a profit is more strikingly shown where the net cost including all preharvesting and after harvesting expenses, per pound of cotton or per bushel of the other products is shown.

TABLE 3

Cost of Producing Potatoes in Northeastern States, as Related to Cost of Fertilizers Used. Compiled from Data Collected From Farmers*

Yield Groups bu. per acre	*Yield per acre in bus.*	*Fertilizer cost per acre*	*Total cost per acre*	*Net cost per bu.*	*Value potatoes per acre*	*Cost of fertilizer as % cost per acre*	*Cost of fertilizer as % value per acre*
37 and under	23	$7.60	$62.08	$2.70	$24.06	12.3	31.6
38-62	51	19.30	74.79	1.47	54.92	25.8	35.7
63-87	76	16.36	74.99	.98	77.02	21.8	21.2
88-112	100	16.96	79.41	.79	100.83	21.4	16.8
113-137	125	17.93	85.07	.68	125.22	21.1	14.3
138-162	150	23.21	102.26	.68	151.81	22.7	15.3
163-187	176	23.25	109.78	.62	175.53	21.2	13.2
188-212	200	29.25	115.15	.58	201.37	25.4	14.5
213-237	225	33.61	141.78	.62	242.68	23.8	13.8
238-262	250	33.82	139.50	.55	261.02	24.2	13.0
263-287	274	45.78	153.19	.56	281.12	23.4	12.7
288-312	300	37.62	142.05	.47	310.42	26.5	12.2
313 and over	370	41.73	153.63	.41	331.95	27.2	12.6

*Data from cost of production statistics, 1923. U. S. Department of Agriculture Yearbook 1924.

The fact that the use of fertilizers increases unit production would indicate that such use is a saver of labor. The hours of labor required to produce various crops have been determined by the Department of Agriculture and the results show 19 hours per acre on the average for corn harvested from standing stalks, 11.7 hours for wheat, 13 hours for oats, and 128 hours for cotton. Assuming that the larger crop does not increase the labor, the increased efficiency from the use of fertilizer on the several crops is about 140 per cent. for wheat, 71 for corn, 62 for oats and 59 and 36 in two cases for cotton. The actual labor efficiency will be somewhat smaller as the larger crop requires more labor in harvesting; but since the preharvest labor is much larger than the after harvest labor, and the former will be increased scarcely at all, the increase in labor for harvesting is but a small percentage of the total.

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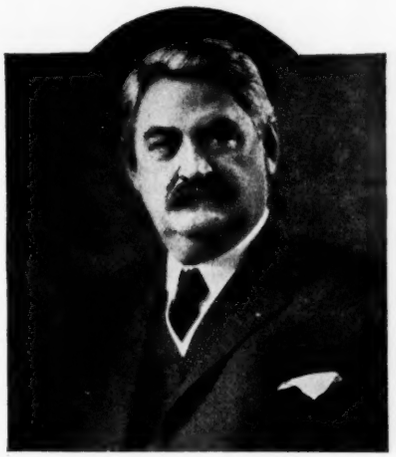
FOREIGN LOANS *and* U. S. CHEMICALS

By John F. Queeny

Chairman of the Board, Monsanto Chemical Works



EVERY morning paper contains news of some kind or another about European industrial combinations, especially in chemical fields, and stock issues or bond sales for all sorts and conditions of governments, states, cities, and companies engaged in manufacture, transportation, and even agriculture. On every financial page we find this same news flavored to the advantage of these foreign enterprises. It is perfectly obvious that the international bankers, for reasons that are too apparent to need comment, are favorable to this kind of foreign financing, and following the able discussion of various angles of the cartel situation in CHEMICAL MARKETS in January, I think that it is well worth our while to look at the more directly financial aspects of the international chemical situation.

Certainly foreign industrial loans have had columns of space in our daily press, and I should judge that some at least of this desirable publicity has been inspired by international financial interests. They are apparently perfectly willing to sacrifice American industry on the altar of foreign securities.

Apparently, also, this attitude (which I believe to be thoroughly pernicious, unpatriotic, and a dangerous menace to American industry, especially the American chemical industry) this attidude of establishing the value of foreign securities at the expense of American business interests is reflected in Congress. The ostensible reason advanced is that in order to maintain our prosperity it is essential that Europe be assisted back to economic health by means of American gold. How thoroughly this propaganda has penetrated Washington is seen by the resolution recently passed in the Senate that the tariff should be lowered. The House did not accept the camouflaged excuse that the agricultural interests demanded lower duties and they tabled this resolution.

Not every one in Washington is convinced of the wisdom of supporting foreign investments to the detriment of our domestic industries, and Senator "Pat" Harrison, although a Democrat, made vigorous reference to the interests and influences of the international bankers in this proposed lowering of our tariff in his speech in the Senate on January 9. Senator Smoot, a Republican, recognized as a real student of international trade and tariffs, took a similar stand and is quoted as saying:

"It is significant that since about 1920 more than $10,000,000,000 in private American money has been loaned to foreign Governments and industrials; perhaps $6,000,000,000 to Europe alone. These private American investors are perfectly willing to have the tariff lowered in order that the European private debts owing them may be paid off by the sale of foreign manufactured goods in the markets of the United States. At the same time they appear to be perfectly willing to cancel the European war debts owing the United States Treasury, and now amounting to some $10,000,000,000. To these gentlemen with international minds American industries appear to be of secondary importance. I am forcibly reminded of that bit of Biblical wisdom: "Where your treasure is there will your heart be also." Every million dollars of private American capital invested in European industrial securities is a powerful argument in favor of lowering the tariff."

Europe was keenly interested in that Senate resolution, and when it was passed made cable inquiry as to what it meant. We should not forget that the whole machinery of the League of Nations at the Economic Conference in Geneva last summer was put in motion in an effort to reduce tariff barriers. Again the plea was made that this was for the general good of the economic world; but plainly the objective was the lowering of American tariff protection.

It is furthermore significant that these same interests are continually pounding at Congress, pleading to cancel foreign debts to the United States or to reduce very materially the amounts of these international obligations. All such cancellations or

reductions, of course, must be at the expense of the American tax-payer.

If this anti-tariff-debt-cancellation-foreign-loan propaganda continues to be carried on much longer, the prosperity which this country now enjoys may be upset. The responsibility will rest with the bankers and the politicians. Already it is having its effect and the Whaley-Eaton Service recently said:

> "It is not believed that American sentiment against the use of American capital to strengthen competitive European industries will seriously affect the eastward flow of money."

Something should be done to arouse a sentiment which will check this out-flow of our working capital. Our international bankers do not realize, I am sure, that every dollar's worth of any manufactured commodity imported into the United States cuts American production one hundred cents. Such curtailment is bound to affect the wages of labor in American industries, and it is a recognized economic fact that the high standard of American living, which rests upon the higher wages paid to workers in this country than in any other section of the world, is the basis of our national prosperity. In my opinion it is high time that American industry took notice of these facts and impressed Congress most vigorously with the fact that it is the duty of the government of this country to give its first, best thought to American interests.

American Money In Foreign Enterprises

It would indeed be illuminating if we could calculate accurately how many good American dollars are now invested in foreign enterprises, especially in those industries that compete directly with our manufacturers, not only in this country, but also in the export markets of the world. There is in my mind a marked distinction between money loaned to business enterprises which compete with our own industries and that which is loanded to foreign governments. The former loans are, to my way of thinking, highly dangerous for we in the chemical industry know very well the methods employed by German competitors, namely, that in order to gain footholds in foreign fields they will sell at or below cost to keep their production active and their sales up. Eventually they hope—and in the past they have often succeeded—to force their competitors out of the market.

German manufacturers, as well as the French, British, Belgian, Italian and others, are organizing powerful combinations, often with important international trade alliances, and American manufacturers must compete whether they want to or not with these powerful associations. Yet we are at the same time forbidden by our laws to combine our forces. On the top of this serious handicap our biggest financial interests are often to be found working directly in the cause of these formidable foreign competitors of ours. Even our own Government is now being asked to lend our rivals a helping hand.

New Incorporations

Armor Oil Co., petroleum products, R. D. Adams, 165 Broadway, $30,000.

Axelrod-Spillinger Corp., chemical products, Schonfeld & Rosenburg, 1440 Broadway, $10,000.

Dan-Mar Silk Co., Paterson, manufacture silks, Henry Marelli, Paterson, $100,000.

Delap, Robert J., Roosevelt, explosives, Edwards & George, Freeport, $10,000.

Federal Coke & Chemical Co., Dover, U. S. Corporation Co., Dover, 50,000 shs. com.

Household Chem. Corp., A. F. Karman, 116 Nassau St., 100 shs com.

Lysle-Vitachrome Laboratories, Inc., Jersey City, chemicals. Corp. Trust Co., Jersey City, 15,000 shs com.

Maroon Chemical Co., P. Reich, 119 Nassau St., $5,000.

Medicinal Products Corp., Newark, drugs, etc., Julius Barr, Newark, 100 shs com.

Midvale Manganese & Iron Co., Wilmington, Colonial Charter Co., Wilmington, $500,000.

Research Laboratory & Manufacturing Co., Wilmington, general research work in connection with scientific chemical technicals, Delaware Reg. Trust Co., Wilmington, $500,000.

Richland Production Co., New York, gas, petroleum, U. S. Corp. Co., Dover, 1,000 shs com.

Southern New England Fuel Corp., Wilmington, minerals, Corp. Trust Co. of America, Wilmington, 500 shs com.

Stamford Petroleum Products Corp., Stamford, no filer given, $20,000.

Thio Chemical Co., J. P. Timoney, 256 Broadway, $5,000.

United Refining Corp., Newark, refining of precious metals, Frederick T. Hey, Newark, $10,000.

United States Nito Company, Delaware, manufacture of chemicals, no filer given. $100,000.

Valverde Exploration Co., New York, petroleum, U. S. Corporation Co., Dover, $1,000,000.

Vendomat Stores, drugs, H. S. Hechheimer, 140 West 42d St. $50,000.

W. B. W. Oil Co., Utica, gasoline, J. S. Flanagan, Norwich, $10,000.

Dissolved

Meadows Chemical Co., Manhattan.

Total imports of chemical and allied products into Canada during 1927 were valued at $33,313,000 an increase of $1,956,000 over previous year. Imports from Britain were valued at $4,314,000 a decrease of $709,000. Imports from the United States amounted to $22,057,000, an increase of $1,892,000. Exports of chemical and allied products were valued at $17,855,000 an increase of $1,367,000. The principal items were fertilizers, $5,380,000, sodium compounds $3,890,000, and acids $3,062,000. Shipments to Britain were valued at $3,926,000, an increase of $667,000, and exports to the United States amounted to $8,835,000 a gain of $481,000.

Bakelite Corp. files complaint with Interstate Commerce Commission alleging that rate of $1.49 per hundred pounds of bakelite, which it describes as synthetic gum, from Chicago to Pittsfield, Mass., is unreasonable and prejudicial in comparison with rate of 70 cents per hundred pounds afforded shipments billed as synthetic gum compounds.

Luftverwertungs Gesellschaft, Innsbuck, Germany, closesr nitrogen fixation plant at Patsch. Plant was originally founded 20 years ago to use excess current of town of Innsbruck in producing nitric acid and sodium nitrate by arc process. This current is no longer available at a low price.

CHEMICAL FERTILIZERS

Five New Synthetic Plant-food Chemicals Developed by the I. G. in 1927.

By Sidney B. Haskell *and* B. G. Southwick*

CHEMICAL fertilizer, until the past few years, was largely a manner of speech. Now, new chemical developments present new possibilities in the form of synthetic chemical compounds adapted to agricultural uses. Nitrogen, always the most expensive element in fertilizers, is being offered in forms and with names unfamiliar to the rank and file. The chemical industry is as interested as the farmer, for such products bespeak the more thorough chemicalization of the agricultural industry.

Fertilizer usage in America began with the native Indians along the Atlantic coast who taught settlers the virtue of putting dead fish under each hill of corn. Then came the use of ashes with the fish, and the use of bones in various forms. Our fertilizer industry for years was based to a large degree upon the use of animal and plant refuse for which no other more valuable use had been discovered.

Chemical Processes Enter

About the first chemical development was acidulating rock phosphate to increase its availability for plant use. Mixed fertilizers even yet are called "phosphates" by many farmers. Gradually, other chemical processes and materials have gained admission to that great field of usefulness, the fertilizer industry. Without reviewing changes in detail, let us consider the most revolutionary developments of recent origin, namely, synthetically produced nitrogen compounds. With limitless supplies of nitrogen in the air, chemists long ago dreamed of the time when this nitrogen could be utilized for industrial and agricultural purposes.

*Director and Editor, respectively, Agricultural Dept., Synthetic Nytrogen Products Corporation.

Necessity Caused Invention

As so often happens, sheer necessity was once again "the mother of invention." Germany, during the world war, being cut off from outside contacts, was in dire need of nitrates for munitions as well as for fertilizer. Thus was born the synthetic nitrogen industry that to-day is a dominant force in the fertilizer industry. In 1927, synthetic methods produced more tons of fixed nitrogen than the Chile fields furnished.

Perhaps the most significant point about these new, air-nitrogen, chemical fertilizers, is concentration. This means less inert material. In the past, inert material totaled 84% of the fertilizer weight delivered

The Badische Anilin and Soda Fabrik Works at Merseburg, Germany. This unit is the largest nitrogen fixation plant in Germany.

to farmers, according to estimates presented by Samuel S. Wyer in his "Fundamentals of our Fertilizer Problem." Chemical fertilizers now being produced by the I. G. Farbenindustrie, A. G., are concentrated by more direct chemical combination of fertilizing elements. Nitrogen is combined with ammonia into ammonium nitrate, also with phosphorus into diammonium phosphate, or with potash to form potassium nitrate. The very latest chemical development in the fertilizer field combines these and other materials into "complete" fertilizers—the nitrophoskas, that are later discussed in detail.

Development and use of synthetic nitrogenous compounds for fertilizer purposes is interesting because it followed first the established practice and then improved upon its own handiwork. At present, we are in the second phase of this development. At first, synthetic sodium nitrate, ammonium sulfate and potassium nitrate were produced. Later came urea, calcium nitrate, diammonium phosphate, ammonium-sulfate-nitrate and ammonium-potassium-nitrate, a bewildering array of names for both fertilizer manufacturers and farmers to learn!

What Is Now Here

In the United States ammonium nitrate and ammonium sulfate were first imported. Later, Leunasalpeter appeared, and its use is rapidly increasing. Leunasalpeter (ammonium-sulfate-nitrate) contains 26% nitrogen, with the very practical agricultural advantage of furnishing nitrogen in two forms, as nitrate and as ammonia. Soon calcium nitrate appeared with 15% nitrogen, and calcium equivalent to 28% calcium oxide. This very soluble nitrate quickly established its merit. Not only does it fit in to established practice, for it carries the same amount of nitrogen as Chilean nitrate, but has the distinct advantage of leaving a calcium (lime) residue in the soil.

The most interesting synthetic nitrogenous fertilizer material is urea. It is the most concentrated, having 46% nitrogen. Since urea is a combination of carbon, hydrogen, nitrogen and oxygen, there is no residue left in the soil. Unfortunately for our farmers, it must pay a 35% ad valorem duty, and yet none is produced in the United States. No one can see who is "protected", and this duty adds another burden for the American farmers to carry, if they wish to use urea (also called Floranid). Urea is a "chemical organic" ammoniate that does not readily leach when applied to the soil, and yet decomposes easily for plant use.

Within recent months Calurea, a new material, was announced and is being sold. It carries 34% nitrogen and the equivalent of 14% calcium oxide. It is produced by combining urea and calcium nitrate, and thus two forms of nitrogen—the amide and nitrate—are available for fertilizer purposes in one material. As yet, Calurea has not had time to demonstrate its merits, but its ancestry is excellent.

Diammonphos (diammonium phosphate) is a concentrated chemical fertilizer of synthetic origin. It contains 21% nitrogen and 53% phosphoric acid. Relatively, very little inert material is in such a phosphate. Nitrate of potash has fertilizer possibilities, especially for certain crops, like tobacco and potatoes. With 1.23% nitrogen and 44% potash, synthetic nitrate of potas is nearly chemically pure fertilizer material of great usefulness agriculturally, as no residue is left behind in the soil.

Scientists still have much to learn about residues left in the soil after using fertilizers. These so-called "inert" elements and compounds have various effects,

The interior of a fertilizer silo at Oppan, Germany. Some idea of the expanse from floor to ceiling of this building may be had by comparison with the two men in the lower center of the picture.

some beneficial, others detrimental, and still others only partially understood. Synthetic chemical fertilizers, therefore, have a significant advantage as the residues left in the soil are less, or in some cases, none at all.

Nitrophoska, easily the sensation of the year in the chemical fertilizer industry, is the latest addition to the superconcentrated, complete fertilizers, the most concentrated of them all. It contains as much nitrogen as nitrate of soda, more potash than in kainit, nearly twice as much available phosphoric acid as in ordinary 16% superphosphate. Fertilizer manufacturers are wondering if it means a new era in the manufacture of chemical fertilizers. Farmers are testing it to find if it gives as good crops as other

mixtures that may be used. Economists are interested, for if Nitrophoska is as successful as it promises to be, then tremendous savings are in sight, in hauling and handling, in freight and storage, and in bags and bagging. Machinery manufacturers are following developments with intense interest, for the use of a super-fertilizer, such as Nitrophoska, may mean either the replacement or re-equipment of much of our present fertilizer distribution machinery.

The Nitrophoskas—there are now five in the family—are the children of the fertile brain of Professor Herman Warmbold, chief research Agriculturist and Economist of the I. G. Farbenindustrie, A G., and of Dr. Bosch, chief of the I. G. They are the product of five years most careful study, all of it revolving around two problems; first, recovery of atmospheric nitrogen at the very lowest cost; and second, packing this nitrogen in the most compact space possible, but at the same time in a form so it may readily be used.

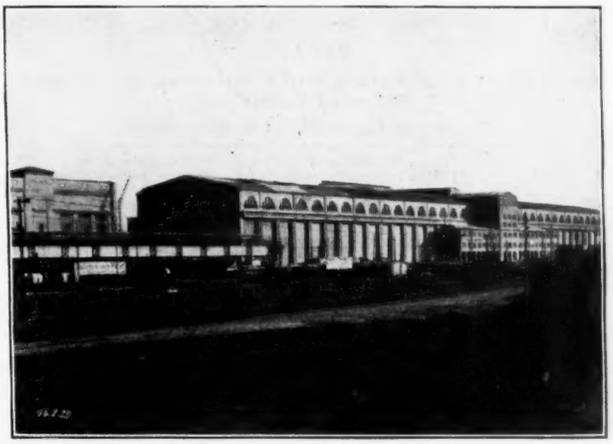
In two significant ways, the nitrophoskas differ from nearly all the older fertilizers. First, in the process of manufacture, the raw products with which the chemist works are concentrated instead of diluted; and second, the final product is a combination of true chemical compounds, rather than a mere mixture of different plant-food carriers.

Dilution is Wasteful

Basic economy has long since branded as wasteful many of the fertilizer methods used for years in the United States. Typically, these methods consist in successive dilutions of the plant food carriers. The most distinctive chemical process involved is the acidulating of rock phosphate. This rock usually contains in the neighborhood of 32% of phosphoric anhydride, present in the form of an insoluble, and to most plants unavailable, tri-clacic salt. A ton of this rock is treated with a ton of sulfuric acid, to make approximately two tons of superphosphate. The product of the mixture contains some sixteen per cent. of "available" phosphoric acid, with a large excess of calcium sulfate, called gypsum or "land plaster." To the great majority of plants on our large areas of crop land, this waste product (gypsum) has no significant crop-producing value, and adds nothing to the productive value of the fertilizer. So it happens that the final form of this manufactured fertilizer (superphosphate) contains only half as much plant food as its original form (rock phosphate), although it is more readily available for plant use.

The dilution of the fertilizer does not stop here, although within recent years, there has been great improvement in practices. Superphosphate is mixed with different potash salts and with different ammoniates, to make a fertilizer of any desired "standard" grade; and if the plant food materials selected are insufficiently bulky to meet the need, then once again are they diluted. The essential economic weakness of the present system is shown by the fact that the dividing zone between low and "standard" grades, is but fourteen to twenty total units of ammonia, available phosphoric acid and potash; whereas the chief raw material used in compounding fertilizers contains nearly double this total. Nitrophoska No. 1 contains nearly double the phosphoric acid contained in superphosphate and in addition 15% of both nitrogen and potash. It truly is fertilizer with the non-essentials left out.

In justice to our present fertilizer technology, it should be said that the industry itself, working from within, has attempted to meet this problem of dilution, and to prevent the commercial need for using "filler" or other dilutent in its products. Its efforts, expressed



A fertilizer silo at Meresburg, Germany, having a capacity for storing approximately 250,000 tons.

through its Soil Improvement Committee, have met with an astonishing degree of success. A recently published statement from Indiana control officials, is to the point. It shows that within a post-war, five year period, the fertilizer tonnage in that state had decreased by three thousand tons but in this same period the plant food delivered to farms had increased by 53 per cent. This shows increasing efficiency.

Chemically, nitrophoskas are produced by bringing together in solution certain carriers of nitrogen, phosphoric acid and potash. In nitrophoska No. 1 these carriers are ammonium nitrate, diammonium phosphate, and potassium chloride. A new series of salts are then formed as shown by the crystalline nature of the dried product, different from that of any of the compounds going into the solution mix. Physically, the product is a bright gray, granular material, good mechanical condition, and good keeping properties, but somewhat hygroscopic. In practice this is of little importance to the fertilizer manufacturer, but may be significant for those who make direct use of the product. It is advisable, therefore, to ship this grade of Nitrophoska in special bags.

Present Status of Nitrophoska

Table No. 1 gives the composition of four out of the five grades of Nitrophoska that are being used now in the United States, one of them, however, only in an experimental way.

Of the above, Nitrophoska No. 1 was introduced on a trial basis in 1927, and used for cotton in the South, vegetables along the Atlantic seaboard, for potatoes in New Jersey and North, and where fertilizer ratios as 4-8-4, 5-8-4, or 6-10-5 have been generally used, gave an exceedingly good account of itself. The fact that concentration in plant food may mean safety in use, has been strikingly demonstrated. In using Nitrophoska a much smaller total quantity of soluble salts is applied per acre, and danger from the immediate effect of chemical fertilizers correspondingly reduced.

Nitrophoska No. 3 is one of the most interesting of the four, for it contains nitrogen in the amide form, called in the trade "chemical organics," and potash

TABLE 1

Shows Plant Food Ratios, and Proportions of Nitrogen in Different Forms, etc.

Percentage Composition of Nitrophoskas

Grade	*Nitrogen-as Ammonia-Nitrate-Amide-Total*				*Phosphoric Acid Water-Soluble*	*Citrate-Soluble*	*Total*	*Potash Water Soluble*
#1 15-30-15	13.4	1.6		15.	27.7	2.3	30.	15.
#2 16.5-16.5-20	11.5	5.0		16.5	15.2	1.3	16.5	20.
#3 15-15-22.5	5.7		9.3	15.	13.8	1.2	15.0	*22.5
#4 15-11-26.5	9.7	5.3		15	11.0		11.0	26.5

*Potash as sulfate—substantially chlorine free.

in the sulfate, rather than the muriate form. Nitrophoska No. 3 is of course more costly than the others, the difference being chiefly due to the form of the potash. It will probably find a wide field of service in mixtures made up for tobacco, and may serve to release large quantities of cottonseed meal for use in the South's rapidly growing livestock industry. From the standpoint of true national economy, it is indeed desirable that cottonseed meal be used as an animal feed rather than as a fertilizer.

Nitrophoska No. 4 has not yet been thoroughly tested. It will be noted that it is low in available phosphoric acid, and phosphoric acid is the plant nutrient in which America is rich. It is expected, therefore, that this grade will make a place for itself compounding many of the better grades of our mixed fertilizers.

Comparative Fertilizer Usage

The writers cannot close this article without bringing out the relation between the Nitrophoskas and fertilizer policies in the two countries most intimately concerned, the United States and the German Republic. Nitrophoskas are attracting great interest in both countries, but they have made greater headway in the latter, a country where mixed, complete fertilizers have never been widely used, than in the United States, where the convenience of such mixtures has long been appreciated. This is astonishing, for on the surface, we would expect more rapid increase in use where farmers understand mixed fertilizers. German farmers have for years used individual materials rather than mixtures. They have been taught to do this, much as state after state in America has taught the profit in home-mixing. As an objective, the possibility has long been held out that some day, through use of the ingredients, farmers would learn to know their soil and their crops so perfectly as to make possible a truly scientific system of fertilization. To those who believe this doctrine and were steeped in its practices, Nitrophoska is anathema.

When a mixture is applied, it is difficult to explain the results of one plant food as compared with another. So rather grudgingly Nitrophoska was suggested in Germany for farmers unable, because of small farms, to handle car-lot units of plant food materials. However, increase in German use has apparently come, not from the small farmers, but from the large estates where the convenience of mixed fertilizers, and the economies that concentration made possible, were most quickly appreciated. Contrast these conditions with those in America. Without doubt fertilizer use has been illogical, but it has been bettering rapidly in recent years. There are some who have said that the understanding of fertilizer use was increasing more rapidly than the ability of manufacturers to adopt new discoveries and adapt themselves to new conditions. Time alone will tell!

Corn Cob Has Great Possibilities

Chemical marvels recalling those resulting from the discovery of the properties of coal-tar seem to be foreshadowed by experiments of the Bureau of Chemistry, Department of Agriculture, in the utilization of farm wastes, such as corn cobs, oat hulls, cotton seed hulls, straw and other cellular materials, according to Dr. W. W. Skinner, assistant chief of the bureau in testimony before the House Committee on Agriculture during consideration of the appropriation bill for the department.

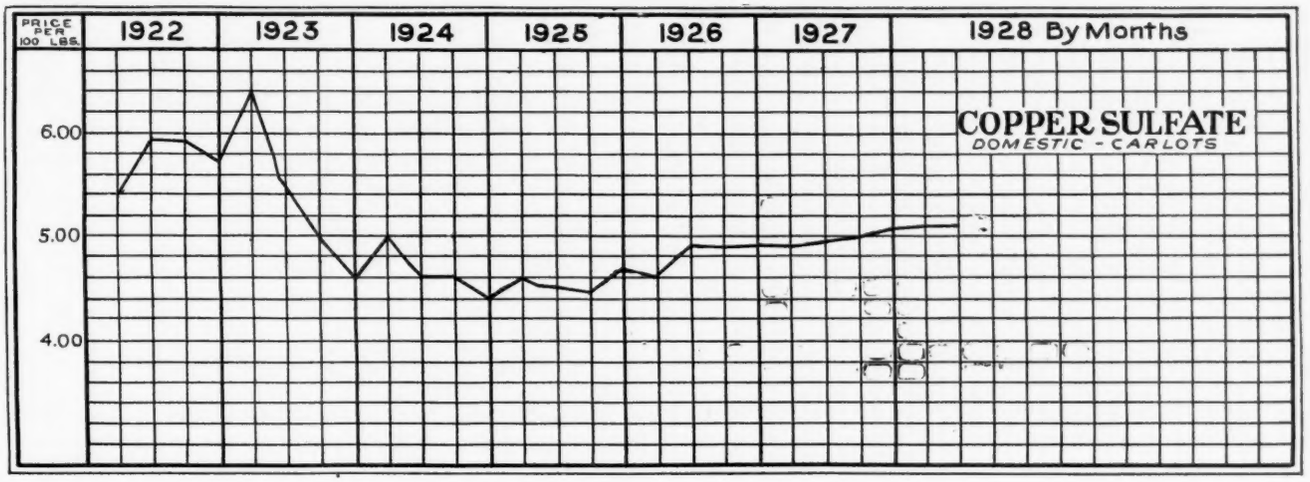
Dr. Skinner foresees the production of electrical equipment made from corn cob plastic, also lacquers, boards, shingles, textiles, dyes, paper-pulp, ink and briquettes for fuel from the same materials. Other farm by-products, particularly straw, may yield unsuspected treasures. Chemical technology for making paper and board from straw has been developed on a laboratory scale.

New uses for furfural are being constantly developed. Dr. Skinner showed the House committee a corncob model, much enlarged, containing ten or a dozen by-products, among them various acids, dyes and adhesives, and also solid materials believed to be adapted for use in making radio dials or similar equipment.

One of the constituents of corn cobs which is now almost wholly wasted is lignin. The bureau has converted lignin into varnishes, dyestuffs and various aromatic chemicals. Lignin, with respect to industrial possibilities, is thought to hold about the same position as coal-tar held a hundred years ago. Dyes made with lignin are perfectly fast.

Methods have been developed in the bureau for the recovery of paracymene, a waste by-product in

(*Continued on page 344*)



Price Prospects

Copper Sulfate

EMERGING from a period of lean profits or even actual losses to its producers, copper sulfate has shown such strength over the past ten months as to prompt the opinion by one dealer that "Further slight advances seem imminent with the approach of the heavy consuming season and barring unexpected contingencies, a price recession is extremely unlikely for a long while to come."

This summation of the situation seems the consensus of opinion among those qualified to comment on the present status of the market and the outlook for the coming year regarding this all important agricultural insecticide. In fact, copper sulfate is in a stronger position to-day from the sellers angle than at any time during the past few years.

Conditions Have Changed

Conditions have not always been thus. It was not more than three years ago that the American market was flooded with European material estimated in some quarters to have been as high as 10,000,000 pounds. At that time there was a large over-production on the other side, particularly in Germany — the outgrowth of an abnormal production from the copper scrap residue of the war days. European producers, seeking an outlet for this surplus, turned to the American market, among others, to dispose of these stocks. It is a matter of history how demoralizing an effect this had on the American market. Competition for business was very keen, with importers selling at levels which certainly must have shown a loss on the basis of import costs. Not only was this accelerated foreign competition felt on this market, but it was equally noticeable in some of our export markets, notably South America. With foreign manufacturers aided by lower freight rates available from continental Europe to our most lucrative export markets, a considerable tonnage was sacrificed in this manner. This loss of export business threw stocks, which ordinarily found their way into export channels, on this market, exerting great pressure on our prices.

Fortunately for producers the organization of the British Copper Sulfate Association and the subsequent signing of a truce checked this destructive export war. Since that time the markets of the world have been much more stable. Another factor which has favored American manufacturers in their export business, has been the reduction of from 25 to 30 per cent. in the freight rates from Atlantic Coast to South American ports. The very excellent volume of business placed over the past six months in South America bears witness to the benefits of this rate reduction. This question of prohibitive freight rates has long been a thorn in the side of Atlantic seaboard producers. Not only have large export orders been lost to European competitors in this manner, but it was also possible, until recently to lay down copper sulfate shipped from Europe on our own Pacific Coast cheaper than Eastern producers were able to do, largely because of the excess freight rates from Atlantic to Pacific ports.

Limited Competition Aids Producers

The weak market of late 1924 and 1925 was bolstered by the temporary closing down of a mid-western producing unit which found it necessary to suspend operations and was obliged to buy in the Eastern market, and also by the withdrawal of one

of the three Eastern producers early last year. While this latter was the smallest manufacturer in this territory, the production was of sufficient volume to strengthen the market.

The possibility of other producers entering so limited a field is negligible. The margin of profit at the present market price of copper sulfate is small and offcers no inducement for a prospective new producer. Possible visions which the consumers may have of lower prices from this source may be summarily dismissed.

Export Volumes Increasing

These underlying conditions have buttressed the strength of the market since last Fall. Conditions in the foreign market assume a rosier hue for American producers and the increase in the volume of business is readily discernible in the export figures: during November, 1927, a total of 835,478 pounds, the largest of any month since December 1925. This figure compares with a total of 402,980 pounds in October and 676,611 pounds in February, the next highest months in the year. Exports for November 1926 were 513,980 pounds. The total exports for ten months of 1927 were 5,301,320 pounds and for a corresponding period during 1926, 4,501,188 pounds. This increase in the export demand has been a decided factor in firming the market.

The price which ruled during the first week in January of the present year was $5.05 per 100 pounds, f. o. b. New York, as against that of $4.80 per 100 pounds for a corresponding period last year. Since then the price has advanced slightly, until during February several very sizeable orders were taken at $5.10 per 100 pounds, New York. Sellers are reluctant to book advance orders and are declining to except business further ahead than sixty days.

Local Trade Now Buying

Export has fallen off noticeably during the past month and producers are turning their attention to the domestic agricultural demand. From this quarter the interest has been good and judged by the orders placed in the district comprising Eastern Pennsylvania, New York and New Jersey, sales throughout the country are expected to be somewhat in excess of last year's. It is this expected demand which prompted the comment in the opening paragraph that when the bulk of the agricultural demand is under way further advances are quite probable. The agricultural uses of copper sulfate have been growing with each passing year, and there is no reason to believe that 1928 will not show a similar gain.

The only fly in the ointment for the producers is the reluctance on the part of the insecticide manufacturers to order out stocks up to the expected quotas. Two reasons are advanced for this slow action. First, that the insecticide people are awaiting an actual demand from their consuming trades. Second, that the Mississippi flood dealt such a blow to agriculture in the flooded areas that stocks of insecticides which ordinarily would have been consumed have been carried over in warehouse for consumption this season. While consumption at the moment is not in excess of the available supply, it is a fact that makers are not realizing any great profit on present production costs. No immediate sharp advance in price is predicted but if the demand reaches expectations a return to levels of 1922-23 are extremely likely.

Donat Agache Talks on Cartel

Paris, (via mail)—The following is the text of two recent statements made by Donat Agache, president, Etablissements Kuhlmann, largest French manufacturer of chemical products, relative to the conclusion in December, 1927, of the Franco-German chemical entente.

In addressing the annual meeting of the stockholders of his company, M. Donat Agache said:

"We reached an agreement after three years of conversation. At the time of the first exchanges with the powerful German group, the proposed bases of the entente carried always our elimination from the export markets. We never wished to accept them, considering that this would mean a defeat for the French industry. After three years of efforts, after the creation of agencies in all countries, after having shown the German industry that we could compete with it, the entente has been made and we have gained all along the line in the domain of our export trade. Not only are the figures of our last three years of exports to be maintained, but as the German communique states, the future developments of the national industries will be in the same reciprocal proportions as that agreed upon for the present production. In consequence, we obtain the present proportion for our development . . . We have succeeded because we have shown during several years what we could do . . . This accord was reached with the full approval of the respective governments. Without it, the Franco-German commercial convention would have been difficult to conclude."

In an interview with a representative of *L'Information*, published January 14, 1928, M. Donat Agache went into more detail concerning the reasons for the Franco-German dyestuffs accord.

"In 1919, the Compagnie Nationale des Matieres Colorantes (formed with the support of the State) centralized the manufacture of intermediate products, starting from the derivatives of tar and coal, and that of finished dyes in its two factories of Oissel, near Rouen, and Villers-Saint-Paul.

"On January 1, 1924, the company was fused with the Etablissements Kuhlmann, which was establishing a complete mineral and organic chemical industry and making it possible for the dyestuffs branch to

(*Continued on page 354*)

Forty Per Cent.

"Timely warning" — "without logic" — "ultra-conservative" — "theory unsound" are a few of the opinions expressed of the statement made in the opening paragraph of the accompanying editorial, reprinted from our January issue. The statements published below are but some of those received on this provocative question.

> No manufacturer should undertake to market a new chemical product until certain that his plant costs are forty per cent. below those of his most efficient competitor.
>
> First, it is a reasonable rule to discount an additional five per cent. the best cost which you will allow to a competitor. Second, it is more than likely that, pressed by competition, he will be able to cut his production costs, due to experience, skill, or improvements developed but not yet used, another five per cent. Third, an established producer, fighting in his own market, may be safely counted upon to slash off ten per cent. of his profit in the battle to hold his own trade. Here is a total of twenty per cent. to be allowed to one's competitor.
>
> Selling expense—be it spent for extra sales effort to break into the market or given away in cut prices to induce buyers to change their source of supply—selling expense will be ten per cent. higher for the new producer. The final ten per cent. is due the industry and the manufacturer, for there is no economic logic (there being an actual over-plant-capacity of practically all chemical products) in undermining the chemical industry's structure, unless the new comer is able to make a decent manufacturing profit for himself.
>
> If these rigid restrictions upon additional output, either from new plants or for new products from existing plants, were enforced, they would do more to steady and strengthen the American chemical industry than any consolidation of companies or all the tariff laws. They are, moreover, the plainest of sound common-sense. It is far easier to make a new chemical than to sell it at a profit. The treasurer and sales manager have a perfect right to demand this leeway of forty per cent. from the chemist and the superintendent. This is the habit—the company policy—of one big chemical corporation which over many years has established a highly enviable dividend record.

Timely Warning

By R. H. Dufault, Sales Manager,
Acids and Heavy Chemicals Div.,
E. I. du Pont de Nemours & Co.

Your editorial "Forty Per Cent." sounds a very timely warning and could be profitably studied by every salesman clamoring for more chemicals to sell, every operator seeking other products to manufacture and every executive seeking new outlets for idle funds. The "forty per cent." figure, of course, is debatable and probably is a variable factor depending upon the particular chemical under discussion. It is inconceivable, for instance, that any new producer of sulfuric acid could possibly estimate a cost 40% lower than established manufacturers. In such cases, however, certain constructive advantages, other than costs, should be apparent before any new chemical capacity is projected. Favorable freight rates on finished product, potential increase in local consumption, the possibility of obtaining premiums for superior quality, etc., are all factors that could properly be appraised and applied toward the "forty per cent.", in the event that bare costs could not make up such a total.

Overlooked By Scientists

By G. J. Esselen, Jr., Vice-Pres.,
Skinner, Sherman and Esselen

I have read your editorial entitled "Forty Per Cent." with much interest. Your one sentence, "It is far easier to make a new chemical than to sell it at a profit" sums up a situation which is too often overlooked by the scientific man. I can fully appreciate all that you have said because we have several clients who are sufficiently progressive to realize the possibilities pointed out in your editorial, and are actively engaged in research to be sure that they are the ones who first develop the "forty per cent" savings rather than some competitor either new or old. This of course makes it all the more important that those who contemplate entering a new field be very sure of their leeway.

Some Genius Necessary

By E. H. Gane
Gane and Ingram

Your editorial "Forty Per Cent." published in your January issue is very much to the point. While it may take some genius to cut manufacturing costs 40% under present conditions, nevertheless, in view of the state of affairs in the chemical industry, it behooves any chemist to look well into his production costs before venturing into the manufacturing field.

If your editorial prevents attempts to launch new brands on already over supplied markets, it will, I take it, have served its purpose.

Without Logic

By Wilson I. Doan, St. Louis Manager
Dow Chemical Company

I think the article "Forty Per Cent." which appeared in your January issue is without logic and bunk. So far as I personally am concerned, it strikes me as one of the weakest things I have ever read in one of your publications.

Ultra-Conservative

By William B. Thom, President
Warner Chemical Company

I am most heartily in accord with your position on this subject. I believe, however, in one respect you are ultra-conservative where you state that an established producer can be counted on to slash off 10% of his profit. It has been my observation that in the chemical industry when established producers are meeting the threatened competition of new producers that at least for a long period of time they will slash to an extent very much in excess of 10%.

The general attitude of the producer seems to be that almost everywhere there is a plant capacity very much in excess of the present demand for the product and when threatened by additional competition they will make it very unprofitable both for themselves and the newcomer for a long period. In the ultimate, however, the new producer if his cost of production is substantially below his competitors will survive, but as you point out the margin must be large.

Theory Unsound

By Dr. E. H. Killheffer
Newport Chemical Works

By "new" product your editorial "Forty Per Cent." evidently does not intend to indicate a really new chemical product, but refers to a product which is already produced and is therefore only "new" to the imagined manufacturer whose case we are discussing.

The 40% leeway may be the policy of some company, but I doubt seriously the universal application of the theory by that or any other company. Perhaps this may be one of the many cases where the exceptions prove the rule. Forty Per Cent. may easily represent the average leeway on a number of products but the application of such a principle as a standard rule would be in my opinion unsound and also foolish.

Now all of the above uses the term leeway as meaning the indicated difference between costs and selling prices. To speak of being certain that plant costs are 40% below those of his most efficient competitor is to talk just plain nonsense.

Suggests Wide Publicity

By Howard B. Bishop, President
John C. Wiarda & Company

Your editorial "Forty Per Cent." should be given wide publicity especially among some chemists who being over zealous often advise clients and start processes where the margin is much less than 40%. The cost accounting in chemical manufacture is in many cases complicated by the production of by-products and erroneous costs are sometimes derived by over estimating the value of such products. If all processes now operating on a margin of less than 40% should suddenly stop there would be a large shortage in production and a return to the sales manager's Utopia of a sellers market.

No Formula

By Salamon Wilder, Chairman
Merrimac Chemical Company

Referring to your editorial—"Forty Per Cent."—in the January issue of CHEMICAL MARKETS the statement is made that "no manufacturer should undertake to market a new chemical product until certain that his plant costs are 40% below those of his most efficient competitors." The term "new product" I understand means simply one not made by the concern that is considering its manufacture and sale; in fact, there may be several producers.

If investigation shows that existing plants, operating efficiently, are able to fully meet the demands for a given chemical product, both with respect to quality and service, then it is, in the writer's judgment, unwise for others to enter this field of production, unless—(a) they have a new and more efficient process,—or (b) can turn out a product of greatly superior quality.

The question as to whether a 40% lower plant cost than that of existing units, gives sufficient margin to justify the installation of equipment for a new product, depends, in a large measure, on the product itself, the volume of business involved and other factors as well. In some instances, a 40% reduction in manufacturing costs would warrant large plant extensions for a new product, and in others it would be wholly inadequate. There is no formula that will serve for all cases.

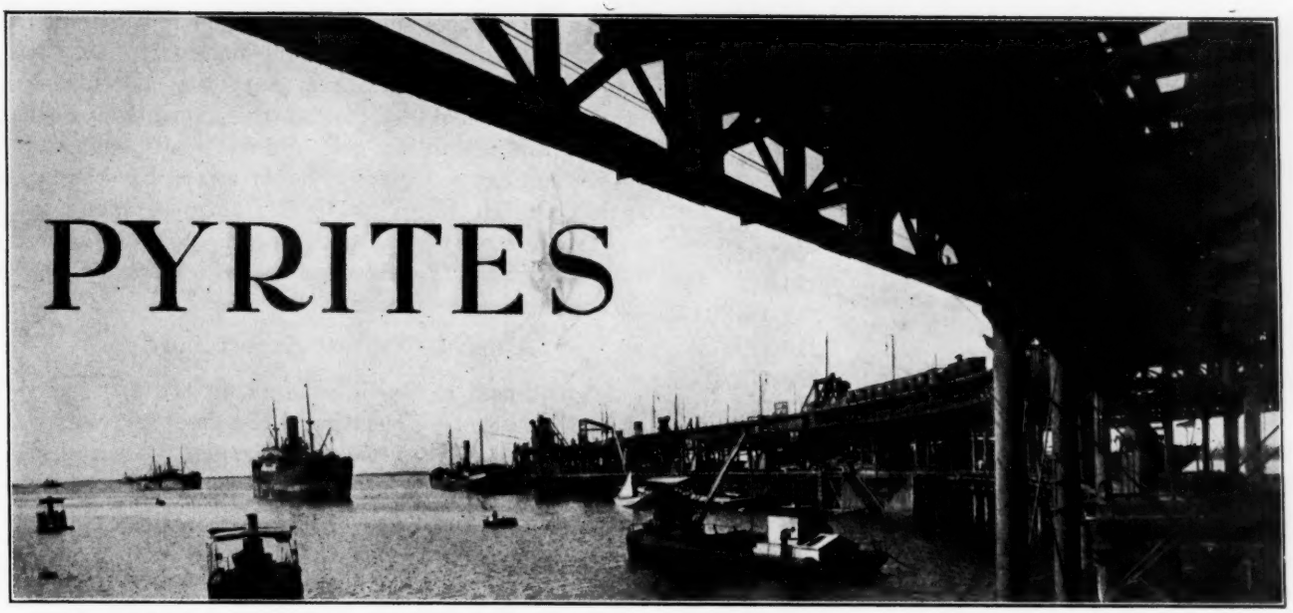
Duplication Unwise

By Edward H. Carus, President
Carus Chemical Company

Your editorial is very interesting, and describes a conservative policy. The competition, resulting from over capacity, applies, however, to other fields besides chemicals, and is probably an economic condition generally in existence to-day.

Manufacturers are human, and we generally suppose there is more profit in the products made by others. Also we under estimate the manufacturing difficulties of proposed items, and overestimate possible markets. Your editorial is therefore timely.

This is a period of increasing gold value, in other words, declining commodity values, and the enterprising people among us should go into gold mining rather than commodity production. The World gold production has passed its peak, and India now prefers to buy gold instead of silver as before the War. It thus appears probable that the tendency of commodities to decline will continue until gold production should again increase. Under such World conditions further duplication of competitors' products is indeed unwise.



PYRITES

By A. D. Ledoux

As a war measure the importation of Spanish pyrites into this country was restricted in 1918. Substitution of domestic sulfur was urged and a search for domestic deposits of pyrites begun. However, since 1921 the volume of imports have been slowly recovering.

WHEN the World War began in 1914 pyrites was practically the only raw material employed for the manufacture of sulfuric acid, and 1,026,617 tons were imported into the United State during that year for the purpose. Domestic pyrites production in 1914 was 336,622 tons. The use of elemental sulfur was then confined almost exclusively to paper, and other industries

No great change occurred in the use of pyrites until after the United States entered the war, although it was growing increasingly difficult to import the ore because the various beligerent Governments were making more and more use of their shipping, and in 1917 our Government began its policy of urging the increased use of domestic sulfides and sulfur. By the Spring of 1918 it became apparent that all freight vessels were needed to carry supplies to France and return immediately for further cargoes, and the few days required to take on pyrites could not be spared. In April of that year the War Trade Board restricted the importation of Spanish pyrites from then until October to 125,000 tons, and the importation of this comparatively small amount grew increasingly difficult as the year advanced. Intensive production of domestic sulfur, and an active search for American pyrites deposits began.

Acid makers, unable to obtain pyrites, were compelled to use sulfur, as the domestic supply of ore did not materially increase. Against their better judgment and earnest device, many of them either entirely removed their pyrites burners, or allowed them to fall into such a condition that a return to the use of pyrites meant new construction or replacement, and they must either make the expenditure or continue the use of sulfur.

It is strange, yet nevertheless a fact, that while we are blessed with large supplies of other raw materials essential to the maintenance and development of our various industries, pyrites, although occurring here and there throughout the country, is not in sufficient amount to warrant development for commerical purposes, except perhaps locally.

Acid making is carried on to the greatest extent in the Eastern part of the country, and this section is especially devoid of pyrites bodies of sufficient size for extensive use. There are some fairly large bodies in the Middle West, and still more extensive ones on the Pacific Coast, but they are not available to the East, and not in any way comparable with the great deposits in Spain, and smaller ones in some other countries.

Pyrites from domestic mines, and importations from 1914 to 1926 inclusive are as follows:

	Dom.	*Imp.*
1914	336,662 tons	1,026,617 tons
1915	394,124	964,634
1916	439,132	1,244,662
1917	482,662	967,340
1918	464,494	496,792
1919	420,697	388,973
1920	310,777	332,606
1921	157,118	216,229
1922	169,043	279,445
1923	181,628	263,695
1924	160,096	246,737
1925	170,081	276,385
1926	166,599	366,151

Figures for 1927 are not yet available, but it is not thought that domestic production increased. The production is now almost entirely on the Pacific Coast.

Pyrites deposits in Spain are very extensive, and it is estimated will last between one and two hundred years. They have been worked for over two thousand years as history and relics show, and a great amount of ore smelted as the extensive accumulation of slag proves. However, ancient mining did not go much below the iron capping where the richest ore lay. It was not until the present century that depth was attained. It is probable that the ancients worked the deposits mainly for gold and silver, although the copper content was greater, but it was utilized as far as needed. The mines of The Rio Tinto Company, in the Province of Huelva, are by far the most extensive, and important. These deposits are mained both underground and open cast.

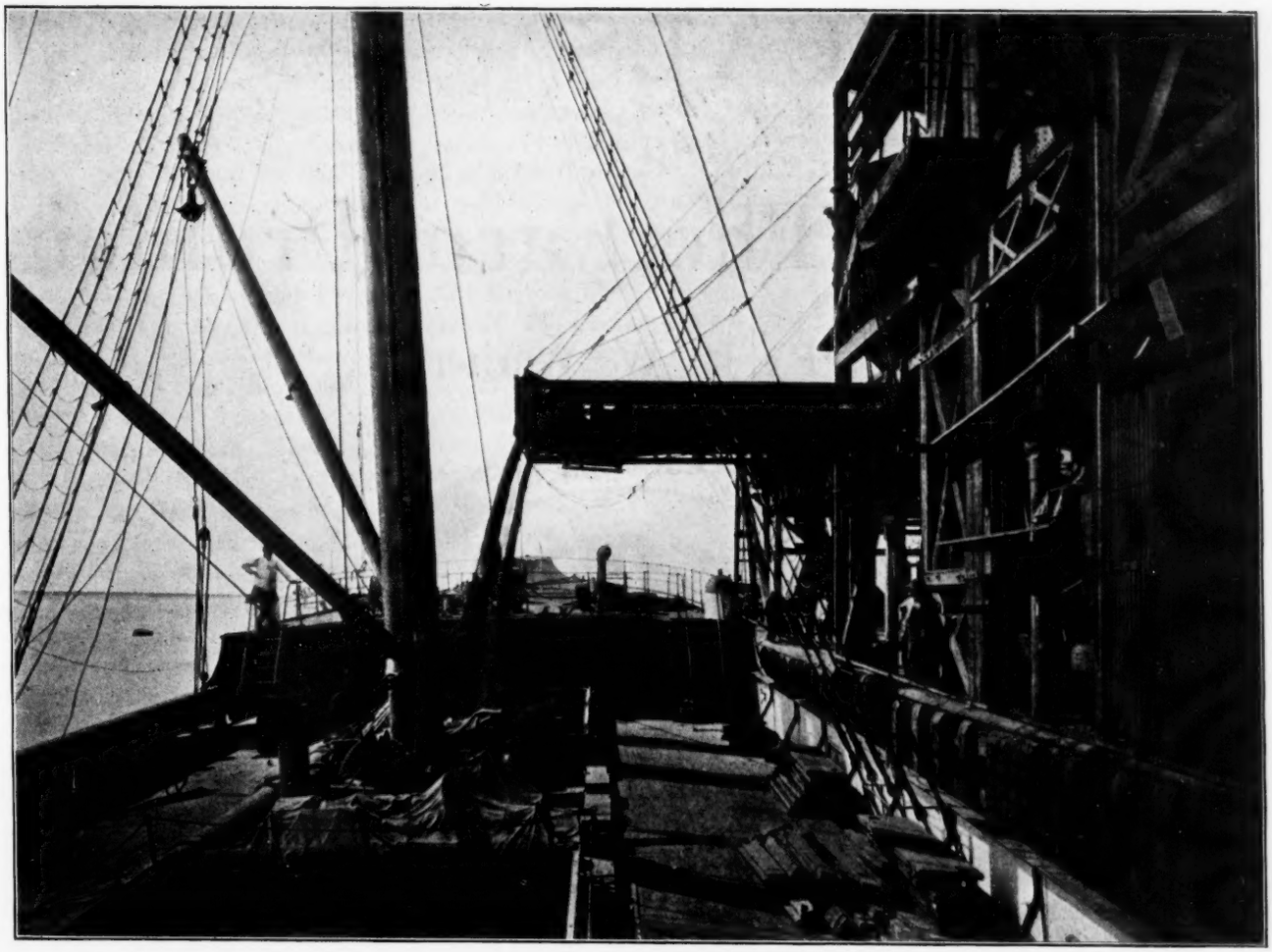
Huelva Greatest Export Port

A great deal of ore is smelted on the spot, and copper produced by leaching. The greatest tonnage is, however, shipped to Huelva, and loaded into vessels for export to other European countries and the United States, and delivered at a very reasonable figure.

The "cinder" or oxide of iron residue resulting from sulfur removal for sulfuric acid manufacture is then treated for copper recovery, and the iron oxide clinkered for use in iron blast furnaces.

The present generation, or the next, need have no fears as to the supply of pyrites. Deliveries of pyrites from European mines during 1926 in metric tons were as follows:

View of one of the Rio Tinto mines, showing trains being loaded for shipment



Electric belt conveyors pouring pyrites ore into the hold of a freighter at the rate of 5,000 tons in ten hours. The boat pictured is one of the Rio Tinto fleet, loading at the Company pier at Huelva, Spain.

Spain,	2,401,442
Portugal,	214,553
Scandinavia,	682,618
Germany, Greece, Italy, Cyprus and France,	1,148,345
Total,	4,446,958

Of the 2,401,442 tons shipped from Spain, 1,129,687 tons came from the Rio Tinto mines, and the balance divided among seventeen other mines.

Japan at the Nitrogen Conference

Japan has been invited to send representatives to a conference to be held April 30 in Europe on the world control of the nitrate fertilizer industry which is being sought by a group of the leading European producers of sulfate of ammonia, embracing France, Germany, England, Italy and Norway.

Two delegates have been named, representing the leading fertilizer manufacturing and distributing interests in the Empire. Mr. Jun Noguchi, managing-director of the Japan Nitrogen Fertilizer Co., Osaka, and Mr. Masao Okumura, president of the Toyo Nitrogen Fertilizer Co., will attend as Japan's delegates. Both companies are under control of the Mitsubishi interests. It is not likely the Japan Artificial Fertilizer Co. and other fertilizer concerns under management of the Mitsui interests will send their representatives.

Mr. Herman Bosch, representative in Japan of the German Nitrate Syndicate, staying in Kobe, will also attend the conference.

Mr. Okumura told a representative of CHEMICAL MARKETS that the complete program of the conference has not been announced but it is known that among the subjects for discussion are such questions as the exporting of both natural and artificial fertilizers, the fixing of minimum prices and the distribution of these products in countries which find it necessary to import. Manufacturers of artificial fertilizers in Japan are looking forward to the conference with a great deal of interest. The demands on the industry here since the War have been so great that large amounts of fertilizer have had to be imported. The domestic production of sulfate of ammonia has not been able to supply half the demand since 1919. Millions of yen are being spent annually in Japan, Mr. Okumura further said,

(*Continued on page 357*)

CHEMICALS *and* The Farm Problem

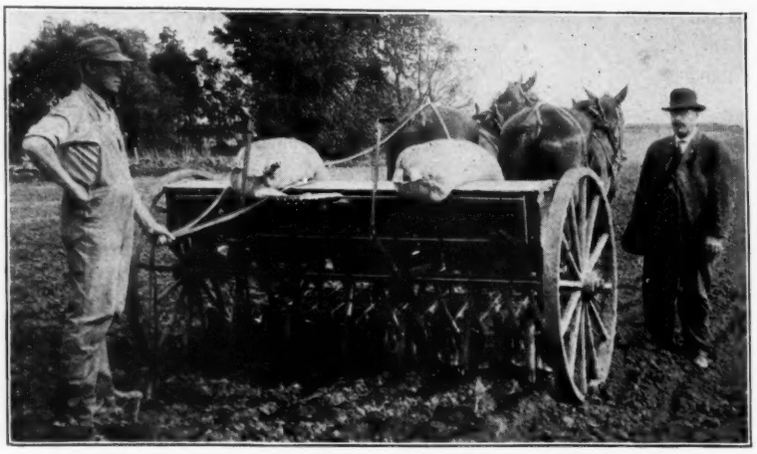
By H. W. Warner

OF the many principles of farm economy that have been subjected to the testing flame of the past eight years none has faced a more withering fire and none has come through so unscarred as that of the advantage to the producer of high acre yields. This, despite the fact that crop surplus constitutes the nub of the farm problem, and that every proposal for legislative aid worthy of the name has for its aim the control of agricultural surpluses.

Agricultural chemicals—not only increase yields, but they lower production cost and raise selling price of each unit grown, which from the business point of view is sound production economics applied to farm relief measures.

The first function of both fertilizer and insecticide—though not by any means the only one—is to increase yields. If that were the sole achievement then the farmer, in using it, would be defeating his own purpose by contributing to his surplus problem. But the ultimate consumer of agricultural chemicals — the farmer himself — knows that such is by no means the case.

Fertilizers, insecticides and fungicides increase crop yields. In doing so they reduce the land, seed, labor and power costs of growing each bushel or barrel of crop. Lower unit cost then is an important result of economic chemical use. It gives the grower a measure of control over his unit cost, the lowering of which offers the greatest single opportunity within his power for marketing his produce at a profit in a surplus-laden, keenly competitive market. Not only does fertilizer decrease the cost of the unit of product but it increases the value of the product by improving its quality. This is a factor which is too often overlooked but one which is of growing importance as has been so well characterized by Sir John Russell, director of the world-famous Rothamsted, England, Experiment Station, who said, "As prosperity increases and people have more leisure they acquire a greater appreciation of the meaning of quality. A population struggling for food is concerned only with quantity; as its taste becomes educated and refined it demands quality." With farm products, as with practically all other products, the market demands and will pay a premium for quality. Thus, it can be shown that economic use of commercial plant food performs at least three important and money-making functions for the user: it increases the total number of crop units from a given area of land; it reduces the cost of each of those units; it increases the value of each unit. Of this three-way functioning of fertilizer to the advantage of the farmer there are many illustrations. These may be drawn from the practical experiences of thousands of farmers or from the results of



An attachment on the disc drill for seeding grain enables the farmer to plant and fertilize at one time. Fertilizer flows thru tubes from the hopper and is distributed in furrows made by the disc. Courtesy American Agricultural Chemical Co.

accurately conducted experiments at many agricultural experiment stations. A few examples are given to illustrate how the fertilizer user may get from his acre of land crop units that are "more, cheaper, and better" than he might otherwise have.

John Smith, of Ohio, in 1927 — a bad year for corn in the east cornbelt — obtained, without fertilizer, a yield of 33.5 bushels of corn, of which 61.5 per cent. was "nubbins". Where he used 400 pounds of 3-12-4 fertilizer in the hill he had a yield of 62.4 bushels, of which less than 30 per cent. was nubbins. The 62-bushel yield cost, up to harvest time, not over $7 more per acre than the 33-bushel yield, a saving of fully 25 cents per bushel in production cost. Comparing the market value of the corn having 61.5 per cent. nubbins with that having less than 30 per cent. nubbins, the difference might be 15 cents per bushel—certainly 5 to 10 cents. More bushels, cheaper bushels, more valuable bushels!

John Smith in this case was the Ohio Agricultural Experiment Station at Wooster.

Experiments In Wisconsin

Frank White, Wisconsin, produced with manure alone 177 bushels of potatoes per acre, of which 75 per cent, or 132 bushels, graded No. 1. With approximately 525 pounds of fertilizer, his yield was 231 bushels, of which 91 per cent. of 210 bushels, graded No. 1. The 231-bushel yield cost to grow only $8 to $10 more than the 177-bushel yield; the lot having 91 per cent. No. 1's were worth several cents per bushel more than the lot having only 75 per cent. No. 1's. More spuds, cheaper spuds, more valuable spuds!

On some soils, such as muck or peat, fertilizer may make the difference between a stand of corn and a failure. Such was the case on this Indiana farm. The two middle rows were not fertilized; the rest of the field received 0-8-24, a muck soil fertilizer.

The real name of Frank White is the Wisconsin Agricultural Experiment Station.

In Delaware, Joe Burke, has produced without fertilizer a yield of 37.8 bushels of corn as an average for 15 years. Of this yield only 22.5 bushels were sound corn. On adjoining land with 450 pounds of commercial fertilizer his average yield has been 82.3 bushels, of which 71.6 bushels were sound corn. From one field he had 37.8 bushels of corn costing him, let us say, 75 cents each, which at an estimated market value of 85 cents returned a net profit of $3.78 per acre. From his fertilizer field he had 82.3 bushels of corn costing him, on the basis used above, less than 50 cents per bushel with a relative market value of 90 cents or more. The "more bushels, lower cost, and higher value" combination pyramided the profit in this case to $32.90 per acre, or nearly nine times that of the unfertilized field.

This farmer, in fertilizing one field, turned with his distributor at the edge of the adjoining one. The effects on the hay crop are shown. No intricate calculations would be required to point out the profit on land that responds so to fertilizer treatment.

As one might guess the Delaware Experiment Station is the Joe Burke mentioned.

Although entirely authentic and representative of what some farmers actually realize from their fertilizer investments, the cases given above present pictures more favorable than one would expect under average conditions. One may reasonably expect increases of 15 bushels of corn, 10 of wheat, 75 of potatoes, 10 of oats and one-half ton of clover hay from adequate use of commercial fertilizer. Conservative as these are, they represent returns of $2.50 to $5.00 for each dollar invested in fertilizer.

A Three To One Investment

There is an abundance of evidence to support the claim that the farmer's dollar expended for fertilizer is a "three to one" investment. Professor Sidney B. Haskell, when director of the Massachusetts Agricultural Experiment Station, made a survey of fertilizer use and returns in the United States. His conclusions were that the expenditure of $230,000,000 by farmers for fertilizer in 1925 returned crop increases valued at more than $697,000,000—somewhat more than three to one. But note well that the value of increases was from only nine crops. The total expenditure of $230,000,000 was for all crops.

Fifteen potato tests in Michigan gave an average crop increase worth $51 for an expenditure of $12 for fertilizer. A large number of fertilizer trials in Wisconsin showed that the value of grain and hay crop increases was at least $14 per acre for an investment of $3.50. In pasture fertilization experiments in Pennsylvania it was found that an expenditure of $10.56 for lime and fertilizer resulted in an increased feeding value of the pasture crops amounting to $40.92 per acre.

Most farmers recognize that fertilizers reduce the unit costs of growing crops, but few figure their fertilizer profits in just that way. The more "economic minded" ones undoubtedly consider the matter from that standpoint, but the great majority are content to recognize that "$4 worth of fertilizer made 10 bushels of wheat worth $12" and let it go at that. Nor is there anything particularly faulty in such calculation unless the fact is overlooked that the profit is not limited to the value of the 10-bushel increase, because, in most cases, all of the bushels grown on the field will be of better quality and, therefore, of higher market value. On the other hand the item of added cost of harvesting and marketing the crop increase is not always taken into account, thus crediting fertilizer with too much net profit.

The Farmers' Calculations

In calculating fertilizer returns, some farmers figure like this, "I got 15 bushels more corn for $3 worth of fertilizer. It takes about five bushels to pay for the fertilizers and the other 10 bushels stand me nothing except the harvesting."

Occasionally one will figure that the fertilizer enables him to produce "a few cheap bushels" on which he can make a long profit. To illustrate: $3 worth of fertilizer returns 10 bushels of wheat, or at a cost of 30 cents per bushel up to harvest time. There is much to be said in favor of this method of expressing fertilizer profits.

I have attempted to point out that the three-way functioning of fertilizer is to make more units, each at lower cost and of higher market value, from a given area of land. That is a rule, not a law, and there are a few exceptions that should be illustrated. Take the truck-crop or early-potato grower with whom yield is a consideration secondary to that of earliness and quality. Heavy fertilization to reach an early market may actually result in higher unit costs. But what is a 5 or 10 cent increased cost compared to a 50 or 75-cent higher market price? Or what is a slightly higher cost compared to the difference in price between high quality and low or mediocre quality in the case of fresh fruit and vegetables?

Again, it is not always possible to show improvement in quality even though there be increased yield. With hay and some of the feed grains, like oats or barley, there may be a profitable gain in quantity with no appreciable gain in market or feeding value. It is conceivable even that the use of improperly balanced fertilizer may lower the quality of certain products by producing size at the expense of texture, flavor, or appearance.

Fertilizer use is predicated upon profit to the user. The answer to the question "Does it pay?" determines whether it should or should not be used. The extension of the use of commercial fertilizer in the past half century from a few thousand tons to some seven million tons annually is the best evidence that the question has been answered affirmatively on more than two million American farms.

Our Dyes Popular In Japan

American dyes are making a serious inroad into Japanese market in competition with both Japanese and German products, according to our correspondent in Tokyo. The fact is a source of worry not only among Japanese producers but also the Government authorities who are protecting home articles in every way possible. Japanese consumers, however, are stoutly protesting against the Government protective steps for home dyes, because of the fact that by further customs protection consumers here will have to buy inferior Japanese dyes at higher prices. Woolen textile manufacturers in Japan, for instance, are severely attacking the proposed raising of customs wall against foreign dyes intended this time not for German imports but mostly for American products. The Japan Wool Industry Association has filed a formal protest with the Government against the tariff revision. American dyes were imported into Japan during last year far more than the usual amount in anticipation of the tariff revision. This tendency has continued into this year. Imports were mainly of those produced by the Du Pont interests, the National Aniline Product Company, the Newport Chemical Company and the Beaver Chemical Company. These American products are competing with the Nissen (Japan Dyestuff Mfg. Co.) products. Du Pont and National Aniline supply heavy amount to Japan while Beaver products are not heavy.

These American dyes also prove powerful rivals in Japanese market to German dyes, for which Doitsu Senryo Goemi Kaisha is the sole agent for Badische Aniline and Soda Fabrik. American companies last year sent their officials to Japan to extend the market spheres. Co-operating with their agents in Japan they have acquired new fields of supply in Osaka. A keen triangular competition waged among Japanese, German and American dyes is an interesting event. American dyes are in the most difficult position, because of two conflicting factors, one the possible tariff revision and the other the proposed withdrawal of import restriction on German dyes by the Japanese Government to be enforced on the ratification of the Japan-German Commercial Agreement by Japan. Now that the Diet dissolved, the tariff revision has

(Continued on page 355)

Economic Aspects of the Use of Insecticides

By R. C. Roark

Insecticide Division, Bureau of Chemistry and Soils

STATISTICS of the production or consumption of insecticides are available for lead arsenate, calcium arsenate and Paris green only. The latest figures of the Department of Commerce, released on January 9, 1928, for these products are as follows:

	Production year ended (pounds)		Stocks on hand (pounds)	
	Aug. 31 1927	June 30 1926	Aug. 31 1927	June 30 1926
Calcium arsenate	18,715,563	5,363,320	11,632,910	6,172,446
Lead arsenate: Powder	18,359,122	16,573,784	3,660,429	1,981,133
Paste	368,932	324,430	26,034	13,400
Paris green	5,743,048	2,863,691	1,829,247	1,164,297

No reports were received from three companies which, according to the Bureau's records, are engaged in the manufacture of insecticides. No close estimate is possible, but it is roughly estimated that the figures given in the above statement represent not less than two-thirds of the total production of insecticides in the United States.

The low production of calcium arsenate in 1926 was due to a large carry-over from the previous year, when climatic conditions checked the cotton boll weevil to such an extent that little dusting was done.

Various estimates of the production of those insecticides for which no official figures are available have been made. The more reliable of these are as follows: insect (pyrethrum) flowers, importations, 9,852,850 pounds 1926; fly sprays (largely pyrethrum-kerosene) production, $14,000,000; and tobacco dusts and nicotine solution, production, $2,500,000.

Production Figures Not Available

For most of the insecticides no figures of production can be obtained. Included among these insecticides are lime-sulfur solution, dry lime, barium and sodium-sulfur preparations, sulfur dusts, Bordeaux mixture, copper carbonate, arsenical cattle dip, insecticidal soaps and oil emulsions, p-dichlorobenzene, naphthaline, sodium cyanide, liquid hydrocyanic acid, calcium cyanides, carbon disulfide, carbon tetrachloride, chloropicrin, derris, larkspur, hellebore, quassia, zinc arsenite, sodium fluoride, sodium fluosilicate, etc.

An idea of the economic importance of insecticides may more correctly be obtained by considering the losses caused by the principal insects—losses which would be many-fold greater if no insecticides were available.

Entomologists estimate that over a period of years the damage that insects cause a growing crop is not less than 10 per cent. of its value. The annual losses to various crops in the following table are calculated on the basis of 10 per cent. of the total value of the crops for 1925.

Table 1—Annual Loss in the United States Due to Insects Attacking

Cereals (corn, wheat, etc)	$406,000,000
Cotton, lint and seed	166,000,000
Flax, fiber and seed	5,000,000
Fruits	66,000,000
Hay and forage	151,000,000
Legume seed, beans, peas, etc	15,000,000
Seeds for planting, clover, etc	3,000,000
Sugar and sirup crops	14,000,000
Tobacco	25,000,000
Vegetables	131,000,000
Woodland products	33,000,000
Other crops	14,000,000
Total	$1,029,000,000

In addition to this total annual loss of over $1,000,000,000 caused by insects attacking crops, great losses are suffered by livestock growers from blowflies, botflies, stable and other flies attacking animals, lice and mites attacking poultry, etc. The loss to livestock caused by insects is conservatively estimated at $100,000,000 annually. An equal loss is suffered by the forests. Clothes moths, carpet and furniture beetles and other insects attacking woolen and mohair fabrics are very destructive, and these, together with numerous other insects attacking stored products (grain weevils, cigarette beetles, etc.) have been estimated to cause an annual loss of $200,000,000. In addition to all this is the economic loss caused by sickness due to such insect-transmitted diseases as malaria, yellow typhus and Rocky Mountain fevers. The total economic loss in the United States due to insects thus

approaches the stupendous sum of $2,000,000,000 yearly.

The use of insecticides is one of the most important measures for the control of the numerous species of injurious insects.

The uses of the principal insecticides are as follows:

Lead arsenate is used at the rate of at least $1,000,000 annually to fight the gypsy and brown-tail moths in New England. It is the principal poison relied upon in combatting the codling moth which annually causes a loss of over $12,000,000 to the fruit growers of the United States. Lead arsenate coated with lead oleate is used against the Japanese beetle.

Probably $10,000,000 a year is spent in controlling the San Jose scale. Lime-sulfur solution has been used for this purpose in the past, but oil emulsions are proving more effective.

Calcium Arsenate, Paris Green, White Arsenic

Calcium arsenate is used largely in dusting cotton for the control of the cotton boll weevil whose annual depredations amount to not less than $150,000,000.

Paris green is used largely in vegetable gardens for controlling such insects as the potato bettle and the cabbage worm. A stimulus to the production of Paris green was recently caused by the discovery that it is effective in killing the larvae of mosquitoes (Anopheles). Large quantities of Paris green have been applied to swamps from aeroplanes.

Liquid HCN is largely used in fumigating citrus trees under tents. Calcium cyanide is also used for this purpose as well as for fumigating houses, mills, warehouses and ships.

The use of carbon disulfide as an insecticide is limited to the destruction of ants' nests and the fumigation of grain.

p-Dichlorobenzene is a valuable insecticide for use against the peach-tree borer and for protecting woolens from clothes moths.

White arsenic is an ingredient of arsenical cattle dip which is used to rid cattle of the Texas fever tick. White arsenic is also extensively used in poisoned baits. The value of an insecticide in preventing insect damage to a crop is shown by the results in western Canada where the use of 72,000 tons of poisoned baits costing about $1,800,000 for controlling grasshoppers during the years 1919-1923 saved crops worth $77,000,000 to the farmers.

Compared to some other industries, the value of the total production of insecticides appears small, but considered in relation to the value of crops, livestock, forests, and stored products saved from irreparable damage by their use, the insecticide industry appears as one of the greatest economic importance.

Federal Trade Commission reports that evidence of cottonseed price manipulation on part of crushers and refiners in violation of anti-trust laws or Federal Trade Commission Act, is not apparent. Commission adds that main cause of dissatisfaction is general lack of uniform system of grading and advocates adoption of standards.

Costs and Yields

Germanium has been found concentrated in the smelter wastes which remain after copper has been extracted from enargite. No use has been made of germanium previously, because of its scarcity, but it may have medical properties, and also, due to its quartz-like appearance may become a substitute for this mineral, which is becoming rare. Germanium was detected in enargite by Professor Papish, of Cornell, with the aid of the spectroscope.—*New Haven Evening Register, 2-17-28.*

Artificial silk and paper may both be manufactured from maize by a new process invented by Dr. B. Dorner of Budapest. Since only one-third of the total maize production has been being used before, and the cost of silk and paper production is said to be greatly reduced, the new invention may be very important.—*Chemicals 2-18-28.*

Coke, if produced in a central coking plant carbonizing a minimum of 1000 tons of slack per day and equipped with every modern device for lowering cost and increasing output, would cost only 3s to 4s per ton.—*R. Ray, Institute of Fuel, annual meeting, Nov. 24, London.*

Ammonia has been synthesized from hydrogen and nitrogen by Carrara at 150 atms pressure. Other processes required from 200-1000 atms. The yield is said to be good.—*Journal du Four Electrique, Sept. 1927.*

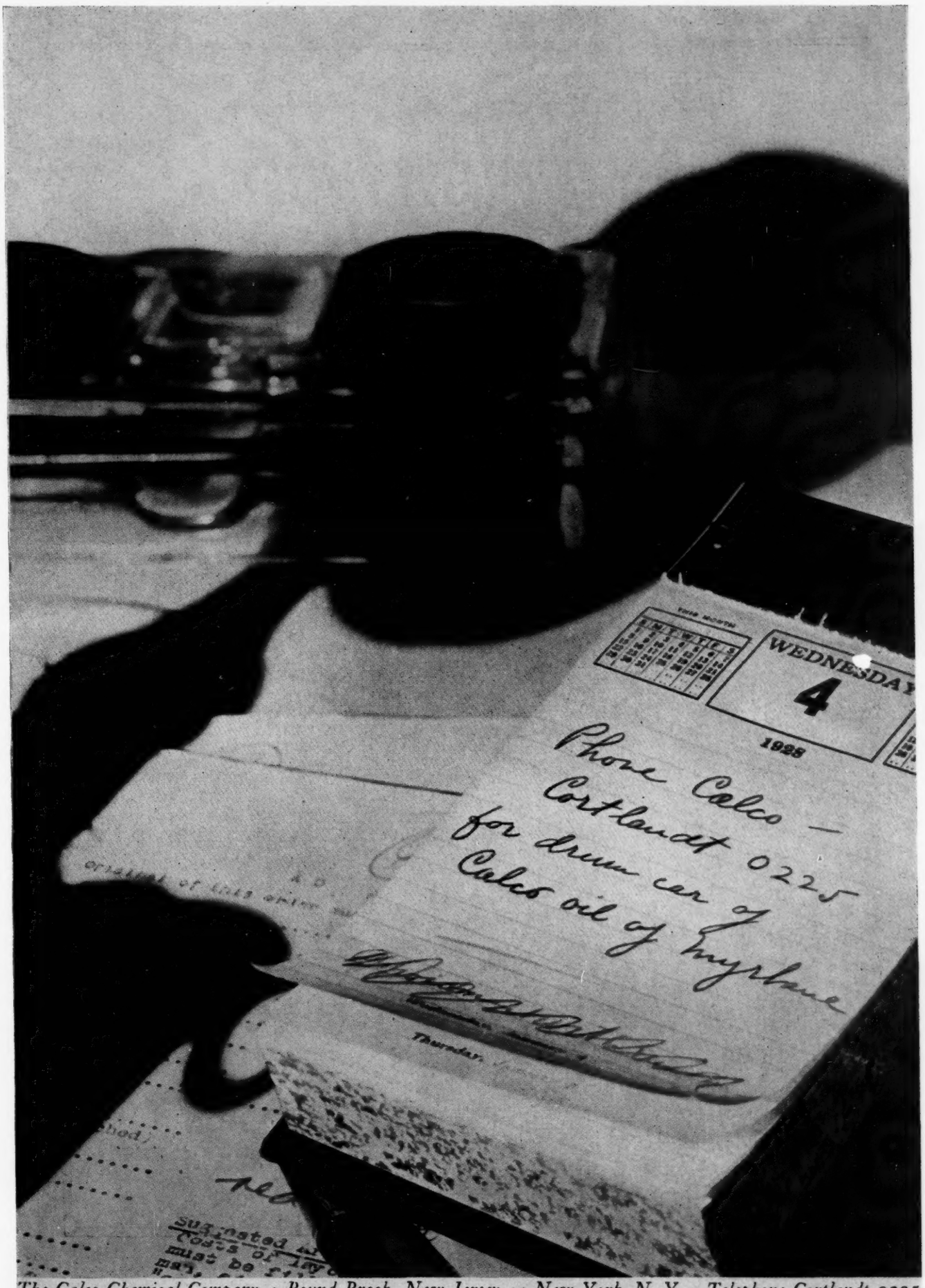
Synthetic ammonia may now be produced more safely and economically in alloy steel retorts containing about two per cent. Cr. according to the Fixed Nitrogen Research Laboratory.

Extraction of glycerine from molasses mash by process to be used by Eastern Alcohol Corporation, Deepwater, N. J., claims lower production cost of about 5% of the present costs.

Steel is to be produced directly from the ore at the Hoesch Steel Works, by a process which is said to reduce production costs 30 per cent.—*Chem. Age, 12-31-27.*

A new process for the recovery of antimony so as to obtain 97% of the stibnite in the ore, is planned for the operation of the antimony mines at Lake George, Canada.

Alizarin may be prepared by the condensation of phthalic anhydride and o-chlorophenol in sulfuric-boric acid at 255°C. The yield is about 75%.—*Tokio Ref.*



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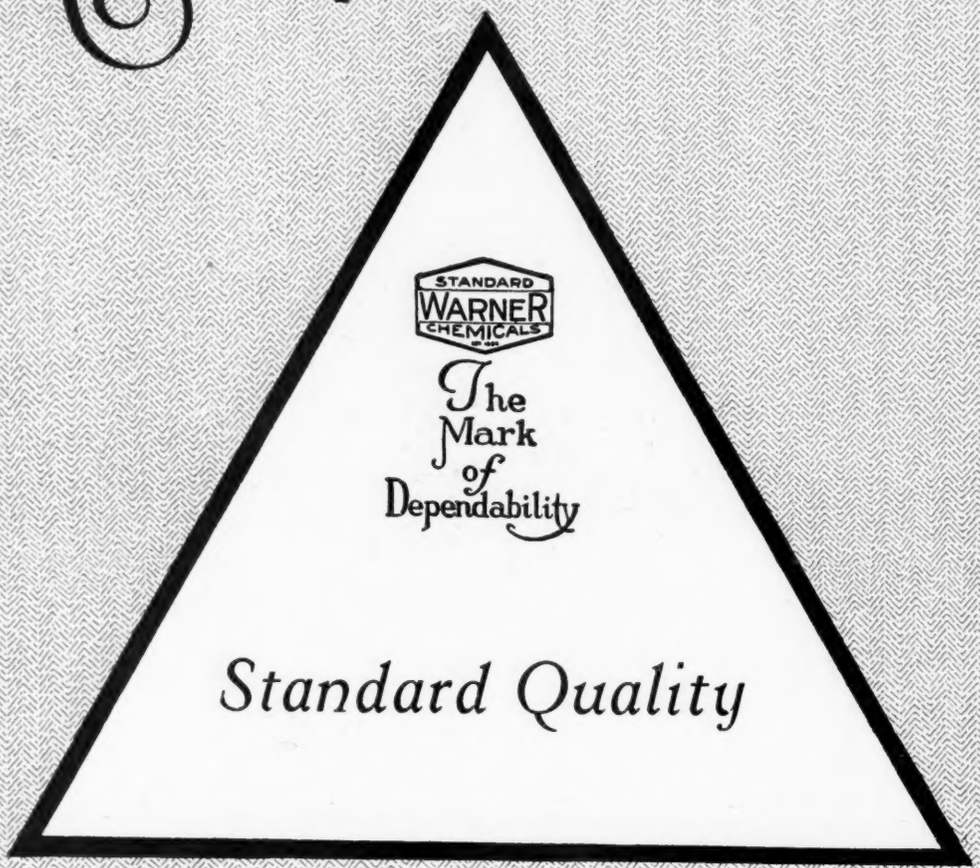
Carbon Tetrachloride



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Chemical Facts and Figures

Three Hundred Chemical Executives Attend "Hoover-less" Capitol Meeting

Addresses By Dr. Julius Klein and Col. Wm. J. Donovan Feature Conference—Discussion Centers on Foreign Chemical Situation—Wilder Calls on Commerce Department to Investigate Production Costs—Foreign Representatives Report on Conditions Abroad—Cancelling of Banquet a Disappointment.

Three hundred chemical executives from every branch of the industry but most of them psychologically "from Missouri" gathered in the Council Room at the Chamber of Commerce of the United States in Washington on February 16. Obviously most of those there were disappointed in anticipation and wondering a little what the realization of a Hoover Conference without Mr. Hoover would be like. It was not quite so bad as a Hamlet-less Hamlet although the cancelling of the banquet appears now to have been a needless precaution and it was a distinct loss not to have heard again the careful, expert analysis of current economic conditions from the Secretary of Commerce.

The Conference, sponsored by the Chemical Advisory Committee, and held under the auspices of the Chemical Division of the Department of Commerce, was distinctly different both in purpose and in spirit from the gathering of last winter. The attendance was nearly double and as a result lost something of its intimate, personal character although this loss was well offset by the gain in wider opportunities to make personal contacts.

The meeting a year ago was called to give the chemical industry an opportunity to learn at first-hand quite definitely what service the Department of Commerce is able and so anxious to render to the industry. The meeting last month, on the other hand, was devoted in the main to a discussion on the foreign chemical situation, especially in reference to the development of cartels and the probable affect of these consolidations upon competition. So broad a subject before a group of chemical executives ranging from representatives of the fertilizer industry to the leaders among the manufacturers of perfumery, lacked a certain definiteness.

"Waste in Distribution" (as brought out by Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce) and the legal status of foreign cartels in the United States (explained by William J. Donavan, assistant to the attorney general) were the high spots of the meeting. Copies of those addresses, which can be obtained from the Department, should be carefully read by every sales executive in the industries.

Chief Concannon, of the Chemical Division, alert, smiling, efficient, reviewed briefly the world situation in chemical competition while his assistant, Thomas W. Delahanty, summed up graphically our chemical opportunities in export trade. From Berlin, Trade Commissioner Dougherty and the Commercial Attache from Paris, reviewed the chemical situation, especially in respect to cartels within their own territories while a plea for standardization in the chemical industry was presented by Edwin W. Ely of the Simplified Practice Department.

Late in the afternoon the attendance of the conference broke up into little groups for dinner at clubs or hotels, for private supplemental conferences of their own, or hurried away by train and automobile. The breaking up seemed premature and abrupt and many bemoaned the lack of the banquet which might have been held sans Hoover, sans any speaker with pleasurable profit to the Washington tourists.

Judged by almost any standard the most interesting and valuable feature of the meeting was the buffet lunch where for an hour associates, business friends, competitors, and leaders in practically every field of chemical enterprise hobnobbed together informally. Just before the Conference broke up late in the afternoon, S. W. Wilder of the Merrimac Chemical Company offered a resolution calling upon the Department of Commerce to make an extensive and intensive study of the conditions surrounding the cost of chemical production among the principal competitive countries. "A large order that," commented an alcohol manufacturer and an alkali sales manager added, "and an expensive one to fill."

"But," as a manufacturer of pharmaceuticals pointed out, "neither alcohol nor alkali suffers greatly from foreign competition."

Adriatic Nitrogen Meeting April 30

International Nitrogen Conference, in the Adriatic, beginning April 30, is planned by Comptoir Francais de L'Azotte, Paris; "Montecatini" Societa Generale, Milan; Nitram Ltd., London; Norsk Hydro-Elektrisk Kvaelstofaktieselskab, Oslo; and Stickstoff-Syndikat, G.M.B.H., Berlin, which companies comprise the greatest nitrogen producers in the world. Invitations to attend this conference have been received over these names by various executives of large American chemical companies, including E. I. du Pont de Nemours & Co., American Cyanamid Co., Allied Chemical & Dye Corp., and Synthetic Nitrogen Products Corp.

The North German Lloyd steamer "Lutzow" has been charted for the conference and will sail from Venice, April 30. First stop will be the Island of Corfu. Thereafter various stops will be made on East Coast of Adriatic.

Scope and objects of meeting will be similar to those of conference held at Biarritz last year, namely, to put on record the knowledge which has been gained in the interval in regard to fertilizers in their relation to agriculture and to afford opportunity of discussion to those present. Papers will be read by Dr. J. Bueb; F. C. O. Speyer; Prof. L. Bretigniere, Prof. Dr. H. Warmbold; Sir Frederick Keeble; Dr. A. Demolon; Prof. Dr. Erwin Baur, H. J. Paige, T. H. J. Carroll; and J. Galland.

Wood Distillers Corp. organizes to act as selling agent for methanol and other products of associated producers. Offices have been established in Masonic Building, Olean, N. Y. W. Z. Georgia has been elected president; W. L. Heim, vice-president and Irwen H. Burns, secretary, treasurer and general manager. One refining works at Hancock, Pa., has already been taken over by new firm, and other units will be added to the chain, so that it can take crude methanol from affiliated companies, refine it, and market the finished products.

Directors, representing all affiliated wood chemical producing companies, are: G. S. Barclay, Williamsport, Pa.; F. P. Bell, Bradford, Pa.; M. C. Burt, Roulette, Pa.; F. F. Clawson, Ridgway, Pa.; T. F. Connelly, Genesee, N. Y.; W. Z. Georgia, J. A. McCormick, M. F. and M. M. Quinn and Mr. Troy, Olean, N. Y.; W. L. Heim, A. J. Keery, Custer City, Pa.; W. J. Merwin, Hancock, Pa.; G. H. and G. I. Treys, Binghamton, N. Y.

Du Pont Rayon Co. acquires manufacturing and sales rights in United States for acetate rayon from the Societe pour la Fabricacion de la Soie Rhodiaseta, France. Product is known as "Rhodiaseta" and will be sold in this country by Du Pont Rayon pending erection of manufacturing plant.

Warner-Westvaco Merge By Exchange Of Stock; Thom Elected President

Warner Chemical Co., New York, and Westvaco Chlorine Products Corp., New York, amalgamate through an exchange of stock. New officials are: William B. Thom, president; William D. Patten, vice-president in charge of production; John A. Chew, vice-president in charge of sales; and M. E. Gilbert, secretary-treasurer. Warner Chemical Co. will continue to operate independently its plant at Carteret, N. J., and also continue to act as exclusive sales agents for Westvaco, whose plant is at South Charleston, W. Va.

William B. Thom

Warner Chemical Co. began operations in 1886 and under direction of the late Dr. Lucien C. Warner, was a pioneer in edible phosphates, carbon tetrachloride and other chlorine products in which the firm still specializes.

American Chemical Society plans symposium on wood pulp and paper industry as leading feature of meeting to be held at Portland, Ore., April 6 and 7, under the auspices of the society's Oregon section and Reed College. Among those to appear on the program are Dr. Robert Eccles Swain, Stanford University; Dr. Ralph K. Strong, Reed College; Dr. F. H. Thurber, Oregon Agricultural College; Dr. T. G. Thompson, University of Washington; Dr. J. Kostalek, University of Idaho; Dr. C. C. Todd, Washington State College; and W. H. Gibbons, U. S. Forest Service.

John-Manville Corp., Canadian Johns-Manville Co., Ltd., Quebec Asbestos Corp., Ltd., Philip Carey Manufacturing Co., Dillon, Read & Co., and several other defendants are charged with violating Sherman Anti-Trust Law and Wilson Tariff Act. Complaint alleges that defendants are conspiring to restrain and monopolize interstate and foreign commerce in asbestos. Complaint asks that Asbestos Corp., Ltd., organized in 1925 be decreed the instrumentality created to carry combine into effect.

Chemists' Club, N. Y., announces following nominations of officers for 1928-29: T. B. Wagner, president; F. G. Zinsser, resident vice-president; E. R. Weidlein, non-resident vice-president; R. T. Baldwin, secretary; A. G. Robinson, treasurer; J. Kendall and S. W. Jacobs, trustees. Independent nominations for one or all officers may be filed with secretary before March 30.

George W. Monroe, Jr., for past four years advertising director Creo-Dipt Co., Inc., North Tonawanda, N. Y., has resigned to become president of recently organized George Monroe Organization, Inc., Buffalo, merchandisers for building material manufacturers.

Du Pont Rayon Co., New York, announces following appointments: H. J. White, general manager; James S. Denham, assistant general manager; and Frederick R. Brown, formerly with Butler Prentice & Co., director of sales.

Chicago Drug and Chemical Association nominates following officers: B. F. Zimmer, president; O. N. Davis, vice-president; William B. Erb, secretary; and Euclid Snow, treasurer.

C. Wilbur Miller, president, Davison Chemical Co. and Silica Gel Corp. sails for Europe, planning to return about April 1.

Lewis Wins Dismissal of Pitch Case

F. J. Lewis Manufacturing Co. wins dismissal January 28, in libel suit brought against it by Baltimore & Ohio Railroad in case of French barque Richelieu, destroyed January 4, 1927 apparently by explosion of briquette pitch dust. Case was brought by French owners against the railroad which was loading the ship and the railroad brought in the Lewis Co. Railroad charged that Lewis Co. contracted to have pitch loaded by coal loading trimmers and that pitch is a dangerous commodity, which characteristic was not made known by shipper to railroad. Court held that Lewis Co. could not be held because it exercised no supervision over loading of the pitch and had no knowledge of the nature of trimmers used; and that as to question of dangerous nature of pitch in loading, a manufacturer could not be assumed to forsee dangers of handling pitch under the circumstances brought out by testimony.

Selden Appoints Dr. Jaeger Director

Selden Co. announces that Dr. Alphons O. Jaeger, its technical director, has developed new contact process and apparatus for manufacture sulfuric acid. Process is now operating on commercial scale and yields are said to be superior to those of any other process. Catalyst allows manufacture of sulfuric acid from pyrites and from other smelter gases without chemical purification and is not poisoned by arsenic, chlorine and other material contained in SO_2 gases.

Annual dinner of drug, chemical and allied trades will be held at Hotel Waldorf-Astoria, New York, on March 15, under auspices of Drug and Chemical Section, New York Board of Trade and Transportation. Hon. Arthur S. Somers, president, Fred L. Lavanburg Co., New York, will be toastmaster, and speakers include Hon. George S. Silzer, ex-governor of New Jersey, and Sir James Elwell Cowie.

Texas Gulf Sulphur Co. reports extensive core drilling on the Boling Dome has proven a large tonnage of sulfur, indicating that the life of the company, at rate of present production of over 1,000,000 tons annually, will be over 40 years. Commercial value of sulfur in this deposit cannot be estimated until after construction of new plant and production of several thousand tons, according to Walter H. Aldridge, president of the company.

Goldschmidt A. G., Essen, and Aron Kirsch Sohne Halberstadt, Berlin, as owners of Metallachemischen Werke Rottleben A. G. reach an agreement for production of lead colors by a new process to be exploited only in Essen, according to Department of Commerce.

Canadian House of Commons, Feb. 13, passes $750,000 appropriation for establishment of National Research Council Laboratories at Ottawa. Total expenditure required will be $3,000,000 to be spread over a fine or ten year period.

Longyear Co., Cleveland, secures option for $300,000 on pyrite property near Goudreau station, Algoma district, Ontario, and is proceeding with development of property.

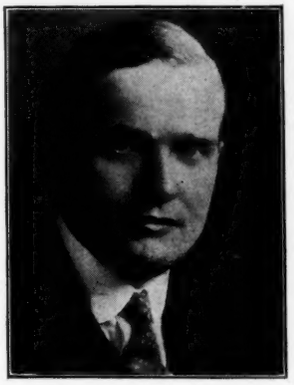
Cesare Michaux, vice-president, Societe Francaise Duco, and director, Nobel Chemical Finishes, Ltd., England, visits E. I. du Pont de Nemours & Co. plant at Parlin, N. J.

National Aniline & Chemical Co., Inc., announces manufacture of National Sulfur Green 3G Conc., which yields shades among the brightest and yellowest of the greens of this class.

Julio F. Sorzano, export manager, Toch Bros. and Standard Varnish Works, N. Y., leaves for Havana on business trip.

Hugh S. Taylor of Princeton Recipient of Nichols Medal

Hugh S. Taylor, head of chemistry department, Princeton University, is formally presented with Nichols Medal at national gathering of chemists at Chemists' Club, New York, March 9. At that time, Prof. Taylor delivered an address on "Catalysis an as inspiration of Fundamental Research." Other speakers included Prof. James Kendall, head of chemistry department, New York University, and Prof. Wilder B. Bancroft, Cornell University.



Hugh S. Taylor

Medal was established in 1903 by Dr. William B. Nichols, charter member of the American Chemical Society, and is awarded by the society each year for "the research published during the coming year which in the opinion of the jury is most original and stimulative to further research." Jury of award consisted of Prof. Arthur W. Thomas, Columbia University, chairman; D. H. Killeffer, secretary, New York Section, American Chemical Society; Dr. B. T. Brooks, consulting chemist; Dr. C. E. Davis, chief chemist, National Biscuit Co.; and Prof. James Kendall, New York University.

British Duty Exemption Extended

The exemption from duty on chemicals provided in the first four exemption orders under the Safeguarding of Industries Act of the United Kingdom, which was to terminate on March 6, 1928, has been extended to December 31, 1928, according to the U. S. Department of Commerce. These orders cover the following chemicals, which may be imported free of duty until that date:

R Acetone, acetone fermentation, acetone synthetic, acid oxalic, amidopyrin, ammonium perchlorate, barbitone, dial, didial, elbon, ethlyene bromide, ethylene glycol, furfurol, glycol ethers, guaiacol carbonate, hydroquinone, R lead acetate, lead tetra-ethyl, lipoiodin, methyl sulphonal, phenacetin, phenazone, phytin, piperazine, R potassium hydroxide, potassium guaiacol sulphonate, pyramidon-veronal, salol, sulphonal and urea.

Texas Gulf Sulphur Co. acquires all sulfur leases held by Sun Oil Co. on Boling Dome formation, lying to east of San Bernard river, Texas, consisting of about 325 acres. This removes any possibility of Sun Oil entering field as third producer. Sun Oil will receive royalty and cash payment of $1,000,000.

Institute of Chemistry, American Chemical Society, in making plans for its meeting at Evanston, Ill., July 23 to August 18, 1928, asks that suggestions as to speakers or subjects be sent to Frank C. Whitmore, National Research Council, Washington, D. C. or Charles D. Hurd, Evanston, Ill.

Corn Products Refining Co. advances prices 15 cents per 100 pounds on bulk products. This follows increases of 25 cents and 10 cents in the last month, and brings level 50 cents above that of the end of 1927. Advances in cash corn prices are responsible for higher finished product quotations.

Dyestuffs department, E. I. duPont de Nemours & Co., announces new direct dyestuffs, Pontamine light gray BV, producing bluish grays said to be suitable for all types of machine dyeing.

Personal and Personnel

Robert Neff, Boston manufacturer of textile finishers and softeners, dies Feb. 4, at West Newton, Mass., aged 70. He had been associated with the manufacture of textile chemicals since 1891; had held all responsible officerships, including councilor, in the Northeastern Section, American Chemical Society; and at the time of his death was treasurer of the trustees of the permanent trust fund of the section and chairman of the finance committee for the annual meeting of the society to be held in Swampscott, Mass., next September.

Guido Meisel, American chemist of Portsmouth, N. H., is sentenced, Feb. 18, to one year's imprisonment and a fine of $5,000 marks on charges of commercial espionage in seeking to obtain German chemical and dye secrets at Dusseldorf, Germany. He was released on bail of 11,000 marks.

H. J. Mitchell, J. Nicholson, Major L. J. Barley, L. H. S. Sanderson and R. B. Brown, all of Imperial Chemical Industries Ltd., join Sir Harry McGowan, head of the company, in this country for the purpose of studying the chemical situation with a view towards bettering conditions throughout the industry.

Lester S. Bacharach, formerly secretary and treasurer, American Solvents and Chemical Corp., is on a business trip through the South and West whose purpose is said to be a projected merger of several chemical and alcohol manufacturing concerns.

James A. Dowdy, sales manager, fertilizer department, Anaconda Copper Mining Co., Chicago, dies Feb. 10, aged 55. Previously he had been connected with Wetherill & Bro., John Lucas & Co., Spencer Kellogg & Sons, and Harrison Bros & Co.

George A. Whiting, president, Standard Guano Co. and Standard Wholesale Phosphate Co., Baltimore, establishes new fertilizer plant at Wilmington, N. C. Superphosphate for plant will probably be supplied by his Baltimore interests.

A. M. Maxwell, vice-president and sales manager, Ethyl Gasoline Corp., New York, returns from a business trip to London in connection with his company's contract for ethyl gasoline with Anglo-American Oil Co.

John T. Barry, president, D. D. Williamson & Co., Brooklyn manufacturing chemists, and honorary member and former president, Drug and Chemical Club of New York, dies March 4, aged 59.

Charles L. Burgoyne, former president, Emory Candle Co., dies February 27, aged 74, at Brimingham, Ala., where he had lived since his retirement two years ago.

R. I. Wishnick, Wishnick-Tumpeer, Inc., New York, is supervising operations at Lawrenceville, Ill., plant, where he will remain until second week in March.

Zach Erhard, formerly with Roesling, Monroe & Co., New York vegetable oil brokers, joins Eastern sales department, Commercial Solvents Corp.

Robert E. Mitchell, appointed sales promotion manager, Valentine & Co., New York.

George H. Lincks, New York, celebrates eighth anniversary of firm's founding, March 8.

F. S. Royster, president, F. S. Royster Guano Co., Norfolk, dies in that city, March 1, aged 78.

News of the Companies

Roessler & Hasslacher Chemical Co. elects following officers: Dr. H. R. Carveth, president; P. Schleussner, first vice-president; M. Kutz, second vice-president; Dr. M. J. Brown, assistant vice-president; C. Dill, assistant vice-president; A. Frankel, treasurer; A. Heuser, assistant treasurer; and P. S. Rigney, secretary. In addition to the preceding officers, the board of directors includes W. A. Hamann, chairman; G. E. Warren; and J. M. Gifford.

Philipp Bauer Co., Inc., New York, is once more under control of its founder, Philipp Bauer, who lost control during the war. Company will operate in same manner as prior to 1914 when it was agent for Philipp Bauer & Co., Hamburg; Transatlantische Handel-Maatschappij, G. M. B. H., Hamburg; and Transatlantische Handel-Maatschappij, Rotterdam. K. P. Bauer is president of the company.

Seaboard Chemical Co., Feb. 18, elects following directors: A. W. Huguley, Henry Howes, Francis Child, H. C. McKenzie, John Farr, Frank J. Chester, Charles G. Bancroft, W. S. Shaw and E. G. Howes. Officers for coming year are: A. W. Huguley, president; E. G. Howes, vice-president; Frank J. Chester, treasurer; and James McInnes, Jr., secretary.

Truempy, Faesy & Besthoff, Inc., New York, is appointed sole agent for United States, Canada and Cuba of Consolidirte Alkaliwerke, Hanover, Germany, producers of Westeregeln brand of caustic potash. Selling privileges also include carbonate of potash, epsom salts, calcium chloride and various bromides.

Interstate Chemical Co., Jersey City, is sued for $25,000 by Walker L. Mifflin, Dover, Del., who alleges that his grape crop was ruined by "Target," chemical insecticide manufactured by that company.

Wishnick-Tumpeer, Inc., New York, opens new Trenton office under supervision of R. F. McGrory, who will act as manager of the rubber division, at same time retaining other past connections.

Joubert & Goslin Machine & Foundry Co., Birmingham, buys Vallez Rotary Filters Co., Bay City, Michigan, and plans to build this line of filters in its Birmingham shops.

British Alizarine Co. is to be absorbed by either Imperial Chemical Industries, Ltd., or by United Turkey Red Co., according to rumors from London.

Great Southern Sulphur Co. is now being tried in the Federal District Court of New Orleans on technical charge of using mails to defraud in sale of alleged spurious sulfur properties.

Standard Brokerage & Distributing Co., Salt Lake City, is appointed to represent American Linseed Co. of California, in Utah.

Kentucky Oxygen-Hydrogen Co., Louisville, Ky., plans erection of new branch plant to cost about $20,000.

Bowker Chemical Co.'s Baltimore plant is partially destroyed by fire Feb. 26, with estimated damage of $100,000.

Abitibi Fibre Co. is enlarging its plant to enable production of 60,000 tons of bleached sulfite pulp per year.

National Silk Dyeing Co., Paterson, N. J., places advertising account with Hazard Advertising Corp., New York.

Monsanto Chemical Works Pacific Coast sales office is moved to 373 Brannan St., San Francisco.

Production Curtailment Agreement Not A Factor At Savannah Meeting

Fifth Annual "Get Together" Meeting of Naval Stores Interests is held Feb. 20, 21, 22, at De Soto Hotel, Savannah, Ga. Expected agreement on curtailment of production as remedy for prevailing weak market and low prices did not develop. Conservation, research, advertising and promotion work were advocated as supplying more permanent improvement of conditions

O. H. L. Wernicke, president, Wernicke Engineers, Inc., Pensacola was elected chairman of the conference and Carl F. Speh, secretary-manager, Pine Institute of America, was re-elected presiding secretary. Pensacola was elected as the 1929 convention city.

Among those who spoke at some time during the three-day session were: Thomas M. Hoynes, mayor of Savannah; Thomas J. Aycock; Dr. Charles H. Herty, Chemical Foundation, on "Expanding Uses of Naval Stores of Creative Chemistry"; Dr. C. C. Concannon, Department of Commerce, on "Foreign Markets for Naval Stores"; J. C. Nash, president, Columbia Naval Stores Co., on "Common Interests"; Dr. William J. Hale, National Research Council, on "Chemical Future of the South"; O. C. Harn, Audit Bureau of Circulation, on "Value of Collective Advertising to an Industry"; Dr. George D. Beal and Dr. W. B. Burnett, both of Mellon Institute; S. J. Reagan and William T. Daughterty, Department of Commerce; Dr. F. P. Veitch and Dr. J. O. Read, Department of Agriculture; and Dr. Eloise Gerry, Forest Products Laboratory.

Hamersly Manufacturing Co., Garfield, N. J., files complaint with Interstate Commerce Commission, seeking lower freight rate on liquid chlorine or liquified chlorine gas shipped from Niagara Falls, N. Y. Present fourth class rate of 37.5 cents per 100 pounds on tankcar shipment, with minimum weight of 30,000 pounds, is declared to be unreasonable to the extent that it exceeds 23 cents per hundred pounds.

Pine Institute of America meeting at Savannah, Feb. 21, votes to raise fund of $240,000 to be used in advertising turpentine over a period of three years. Subscriptions received at meeting amounted to $81,000. Following officers were elected: A. F. Bullard, president; Carl F. Speh, secretary and general manager; and H. M. Wilson, treasurer.

U. S. Court of Customs Appeals, in case of Merck & Co. vs. the United States, involving classification of sodium nitroprusside, decides that it should be dutied at 25 per cent. ad valorem under paragraph 5, tariff act of 1922, which includes all chemical products not specifically provided for.

Merritt bill now before the House proposes a fund for research work in the manufacture of American dyes. It will probably take the form of a textile foundation for research work to aid textile industry.

W. Frank Cornell, vice-president and general manager, Buckeye Soda Products Co., resigns to become sales manager, Standard Printing Ink Co., Cincinnati.

Charles W. Klaus, formerly with Central Chemical Co., Chicago, joins sales department, Benner Chemical Co., Chicago, March 1.

Adam Lewandowski, 52, meets death upon falling into a vat of boiling chemicals at works of Charles Lennig & Co., Bridesburg, Pa.

Charles Allen Clark, secretary and general manager, American Paint Journal Co., Inc., St. Louis, dies in that city at thirty-eight.

Salesmen Pick Flaws In Breithut Questionaire At Monthly Banquet

Dr. F. E. Breithut's attempt to solve the problem of "What the Chemical Salesman Thinks About"; a series of songs and recitations by W. E. Norris of Barber Asphalt Co. and Carl Straubstader of Grasselli Chemical Co.—who sell chemicals in their spare moments, and a motion picture reel in the production and manufacture of copper by Alfred O'Brien of Anaconda Copper Co. on the occasion of the regular monthly banquet of the Salesmen's Association of the American Chemical Industry at the Machinery Club, New York on February 28, furnished approximately 60 members and guests with one of the most entertaining evenings since the inauguration of the Association.

Dr. Breithut's research into this all important question was in the form of a semi-technical questionaire used in college examinations which was distributed to the members. Eight minutes were allowed for answering the questions asked and a check up on the percentages revealed at least one salesman who thought so much that he unearthed a mistake in the questionaire. This was the high spot of the examination and a further search for genius revealed varying degrees of success. As there were none present who admitted to having less than 75% on the examination, the experiment proved the salesmen foxy enough not to boast of a lower rating.

W. E. Norris' monologue of a trip on the Lackawanna Railroad and subsequent song entitled "My Old New Jersey Home" drew three curtain calls from his audience. Accompanied by Carl Struabstader, he rendered several other songs and recitations, equally well received.

Mr. O'Brien prefaced his motion picture reel by a short description of the mining of copper ore and the picture graphically showed the processes of copper production from the mines in Montana to the finished product and the many uses to which it is put.

Swedish Match Co. contract with the Esthonian government is confirmed for 28 years. A new company has been formed with a capital of 4,000,000 krone. The Esthonian government will receive 3,000,000 krone and the income from the match duties. The Swedish Co. will also take over the 7,000,000 Esthonian government guaranteed bonds in the sum of 7,000,000 krone.

Snia Viscosa, Milan, Italy, is again undergoing reconstruction by writing down its capital by 200,000,000 lire to 800,000,000 lire and then issuing 200,000,000 lire of new shares to holders at above par. New capital will be used to redeem bank loans incurred by taking over Varedo Co. Stablization of the lira has necessitated writing down value of the plant.

James W. Grace, son of the late John W. Grace, one of the founders of W. R. Grace & Co., and one time manager of the company's branch at Valparaiso, Chile, where he was one of earliest figures connected with nitrate industry, dies in England Mar. 1, aged 50

Davison Pick Fertilizers, Inc., S. M. Mayer Alcohol Co. and Board of Commissioners, port of New Orleans, reach tri-partite agreement for building a wharf to be used by two companies and also as public wharf.

Dupke Paint Products Manufacturing Co.'s Beloit, Wis., plant, destroyed by fire, Feb. 4, with estimated damage of $50,000 is being rebuilt.

Robert F. Carr, president, Dearborn Chemical Co., elected director, Wilson & Co., succeeding C. M. Kittle, deceased.

L. N. Markwood takes charge of insecticide and caustic poison work at New York laboratories, Department of Agriculture.

Chemists' Club Honors Dr. E. F. Smith

Dr. Edgar Fahs Smith, professor emeritus of chemistry University of Pennsylvania, is guest of honor at the annual dinner of the Chemists' Club, New York, Feb. 29, 1928. This was in accordance with an old custom by which a committee, consisting of past presidents of the club, annually selects an outstanding member of the profession to be guest of honor at this dinner.

Dr. Marston T. Bogert, professor of chemistry, Columbia University, extended congratulations to Dr. Smith, on behalf of the society, while Dr. Ralph E. Wilson, president, Chemists' Club of Chicago, performed a similar function for that organization. Dr. Allen Rogers, Pratt Institute, Brooklyn, spoke on "Edgar Fahs Smith, the Chemist;" and Dr. Josiah H. Penniman, provost, University of Pennsylvania on "Edgar Fahs Smith, the Man." Dr. Smith, in response, paid tribute to his friends and co-workers in the profession.

A number of telegrams from prominent chemists throughout the country congratulating Dr. Smith were also read.

Du Pont Viscoloid Co. and Pittsburgh Plate Glass Co. form Pittsburgh Safety Glass Co. to manufacture non-shatterable glass, to be known as Duplate. New company has been capitalized at $1,000,000 with B. P. Davis of Du Pont as chairman of the board and H. S. Wherrett of the Pittsburgh company as president. Entire stock of new corporation will be held by these two companies. A manufacturing plant will probably be erected at Creighton, Pa., to take over operations now being conducted in temporary plant.

Permutit Co. files suit against Paige & Jones Chemical Co., Inc., to restrain latter from further infringement of Borrowman and Spencer patents owned and used by Permutit Co. Borrowman patent, according to complaint, involves new and improved method for producing a water softening compound and the compound itself, while the Spencer patent covers process for purifying water.

U. S. Gypsum Co. files injunction seeking to halt $47,000,000 merger of Certain-teed Products Corp., Beaverboard Companies, and Beaverboard Products Co. U. S. Gypsum asserts that merger will prevent its collecting royalties on Beaver wall board which it agreed to accept in 1926 in settlement of a $4,000,000 claim for infringement of patents.

Imperial Chemical Industries, Ltd., offers to acquire Tees Salt Co. on basis of ten Chemical £1 par 7 per cent. cumulative preference shares for each £10 Tees Salt common share plus a 5s cash payment for each Tees Salt common share.

Public Service Commission, Albany, approves new freight rates of Delaware and Hudson R. R., reducing 3c per cwt. the charges on wood alcohol from Mechanicville to Malone on Rutland, effective March 17.

Harley-Love resolution calling for investigation of alleged price-fixing by fertilizer companies operating in South Carolina is approved by the House of Representatives of that state and sent to the Senate.

Joseph S. Chamberlain, professor of organic and agricultural chemistry, appointed head of department of chemistry, Massachusetts Agricultural College.

Freeport Texas Co. states that engineers report, January, 1927, showed recoverable sulfur sufficient to take care of company's present volume of business for 20 years or more.

National Lime Association announces 1928 convention at Belmont Hotel, New York, May 23-24.

The Financial Markets

Mathieson Alkali 1927 Earnings Increase 95c Share Over 1926

Balance for Year Ending December 31 Shows Current Assets of $2,737,039—Total Surplus Higher—Monsanto Chemical Income Almost Doubled Over Year—Dividend Up—National Ammonia Co. and Ammonia Corp. in Bankruptcy—Lazote Principal Creditor of Ammonia Corp.

Mathieson Alkali Works, Inc., reports for the year ended Dec. 31, 1927, net income of $1,832,916 after depreciation, depletion and Federal taxes equivalent after preferred dividends to $11.60 a share on the 143,057 shares of common stock outstanding. This compares with $1,679,485 or $10.65 a share on 141,257 shares of common stock outstanding in the preceding year.

The income account for the year compares:

	1927	1926	1925
Total oper. earns	$2,962,581	$2,725,559	$2,285,553
Deprec. & deple	840,670	771,626	657,320
Net earns	$2,121,911	$1,953,933	$1,628,223
Charges	47,386	48,877	15,724
Fed taxes	241,609	225,721	147,476
Net inco	$1,832,916	$1,679,485	$1,465,033
Pfd. divs	173,250	173,562	175,567
Com. divs	588,828	588,828	147,207
Surplus	$1,070,858	$ 916,095	$1,142,259
Prev. surplus	4,525,990	3,689,223	3,169,688
Total surplus	$5,596,828	$4,605,318	$4,311,947
Sink fund retire pfd	50,000	50,000	50,000
*Accident acct	.....	.....	25,000
Develop exp	56,364	.....	.....
Obsoles, res	.....	.....	500,000
Litig. coal suits	79,237	.....	.....
Misc. adjusts	11,248	29,228	47,724
P. & L. surplus	$5,399,979	$4,525,990	$3,689,223

*Account of accident, Saltville settling basis, Dec. 24, 1924.

The balance sheet as of Dec. 31, 1927, showed current assets of $2,737,039 compared with $2,780,002 Dec. 31, 1926; current liabilities of $997,144 against $925,165 leaving net working capital of $1,739,895 against $1,854,837.

Monsanto 1927 Earnings Increase

Monsanto Chemical Works reports for year ended Dec. 31, 1927, net income of $672,622 after all charges, equivalent to $6.11 a share on 110,000 shares of no par capital stock. This compares with $341,407 or $5.50 a share on 62,000 shares of $50 par stock in 1926.

Balance sheet as of December 31 last shows current assets of $2,271,213 as against current liabilities of $289,248, leaving a net working capital of $1,981,965. At the end of the preceding year current assets totaled $2,065,467 and current liabilities were $371,371, leaving a net working capital of $1,694,106. Cash and government securities amounting to $562,579 were well in excess of total current liabilities. Profit and loss surplus at the end of the year amounted to $1,644,642.

During the year stock of the company was changed from 62,000 shares of $50 par to 110,000 shares of no par value. A block of 10,000 shares of the new stock was sold publicly. A new process for the manufacture of sulphuric acid was developed and, in addition to its use in the company's own plants, is being used by other manufacturers under license.

National Ammonia Co. in Bankruptcy

Niagara Ammonia Co. Inc., and the Ammonia Corp. file petitions in bankruptcy, the former listing liabilities at $947,748 and assets at $107,899, and the latter fixing its liabilities at $839,249 and assets at $489,467. The petitions were signed by F. S. MacGregor, president of both corporations.

Principal creditor of the Niagara concern is the Ammonia Corp., which holds notes and other evidences of indebtedness totaling $946,166. Lazote, Inc., Wilmington, Del., is chief creditor of Ammonia Corp. holding notes indorsed by the Niagara concern for $821,714.

The main items in assets of the Niagara Corp. are its plant, stock and fixtures at Niagara Falls, valued at $97,579. The principal items in the listed assets of the Ammonia Corp. are rights to manufacture synthetic ammonia under foreign patents. These are valued at $350,000.

Corn Products Refining Co., reports for the year ended Dec. 31, 1927, net income of $11,905,289 after charges and Federal taxes, equal after preferred dividends to $4.01 a share on the 2,530,000 common shares ($25 par) outstanding. This compares with $11,933,881 or $4.02 a share on the common in the preceding year.

The balance sheet as of Dec. 31, 1927, shows currrent assets of $57,206,413 compared with $52,959,089 Dec. 31, 1926; current liabilities $6,225,391 against $5,835,230, leaving net working capital of $50,981,022 as compared with $47,123,859.

Borne-Scrymser Co. declares extra dividend of 50 cents and the regular semi-annual dividend of $1, both payable April 6 to stock of record March 23. Six months ago an extra dividend of 75 cents was paid.

At annual meeting of stockholders retiring directors were re-elected. Officers were subsequently re-elected.

Mutuelle Solvay is reported planning increase in capitalization from 100,000,000 francs to 300,000,000 francs. Proposed increase is reported due to reported grouping of French viscose producers. Reports have been current that Gillett Bernheim Rayon group are forming merger with Solvay group.

Eastman Kodak Co. declares extra dividend of 75 cents on common stock in addition to regular quarterly distribution of $1.25 a share. Regular quarterly dividend of $1.50 a share was also declared. All payable April 1 to stock of record Feb. 29.

National Distillers Products Corp. reports for 1927 a net income of $58,973, after interest, depreciation and other charges, equal to 55 cents a share earned on 107,720 preferred shares, against a net loss of $137,771 in 1926.

National Lead Co. declares regular quarterly dividend of $1.25 on common payable to stock of record March 16, and 1½ per cent. on preferred B, payable May 1 to stock of record April 23.

Grasselli Chemical Dividend At $11.27 Share, Increase Over 1926

Grasselli Chemical Co. reports net earnings for year ended Dec. 31, 1927, equivalent to $11.27 a share on common stock, after all charges and preferred dividends. This compares with $10.24 a share in 1926.

Grasselli's assets, totaling $50,631,708, consist of $17,883,464 of current, against $1,369,393 of current liabilities, a ratio of better than 13 to 1. Surplus and undivided profits total $11,619,-220. The balance sheet is as follows:

Assets

Cash, receivables, investments	$9,360,902
United States and Federal Land Bank bonds	233,575
Inventory	8,288,978
Current	17,883,464
Land, plant, equipment	30,400,109
Fire insurance fund, investments in United States bonds and marketable securities	2,348,135
Total	$50,631,708

Liabilities

Accounts, bills payable	$1,369,393
6 per cent. preferred	13,724,200
Common stock	21,570,760
Surplus, undivided profits	11,619,220
Fire insurance fund reserve	2,348,135
Total	$50,631,708

Certain-Teed Products Corp., New York, declares regular quarterly dividends of $1 a share on the common stock and $1.75 a share on both the first and second preferred stocks, all payable April 1 to holders of record March 15.

Directors have voted to redeem on May 1 all of its outstanding first and second preferred stock other than stock deposited in exchange for new 7% preferred, at $120 and $110 and accrued dividends, respectively. Redemption will be made at the office of Blair & Co., Inc.

American Smelting and Refining Co. reports for year ended Dec. 31, 1927, net income of $15,477,770 after all charges, equal after preferred dividends to $19.64 a share. This compares with $17,760,721 or $19.17 a share in previous year.

Surplus after all dividends amounted to $7,097,930 compared with $9,685,871 in 1926. Profit and loss surplus was $27,047,224, after $4,248,000 reserves, against $24,197,294 at close of 1926, after reserves of $5,000,000.

Industrial Rayon Corp. reports for year ended Dec. 31, 1927, preliminary net profits of approximately $907,000 after all charges, equal to $1.88 a share on the combined 461,651 no par class A and 2,000 class B shares outstanding.

Celanese Corp. of America issues 114,818 shares of 7 per cent. cumulative series prior preferred stock with par value of $100. Purpose of issue is said to be for extending manufacturing facilities.

Northern Ontario China Clay Corp., Ltd., incorporates at Toronto with $6,000,000 capital to operate extensive china clay deposits in Northern Ontario.

Hercules Powder Co. declares regular quarterly dividend of two per cent. on common stock, payable March 24, to stock of record March 15.

Commercial Solvents Corp. earns $9.24 a share on 217,722 shares of stock against $14.58 a share on 108,861 shares in 1926.

Celanese 1927 Profits At $2,745,071

Celanese Corp. of America reports for year ended December 31, 1927, net profit of $2,754,071 after interest, depreciation, federal taxes and reserves, equivalent after allowing for dividend requirements and participating provisions of 7% first participating stock, to $1.72 a share on 1,000,000 no par shares of common stock. This compares with net profit of $908,913 in 1926.

Income account for year ended December 31, 1927, compares as follows:

	1927	1926
Operating profit	$4,036,388	$1,458,518
Interest, etc	127,260	173,100
Depreciation	314,341	165,873
Federal tax res	407,643	123,800
Other reserves	†433,073	86,832
Net profit	$2,754,071	$908,913
1st pfd. dividends	841,244	570,287
Surplus	$1,912,827	$338,626

†Includes reserve for bad debts, contingencies and other deductions.

National Lead Co. reports for the year ended Dec. 31, 1927, net income of $4,929,396 exclusive of insurance reserve and after charges, equivalent after preferred dividends to $8.90 a share on the 309,831 shares of common stock outstanding. This compares with $9,004,567 or $35.33 a share on the 206,554 shares of common stock outstanding in the preceding year. Net income for 1927 including insurance reserve, amounted to $5,343,639 or $10.25 a share on the common stock as compared with $9,326,212 or $36.89 a share on the common stock in 1926.

Courtaulds, Ltd., London, for year ended December 31, 1927, shows net profit of £4,585,921 after depreciation, federal taxes, management expenses and directors fees, comparing with £3,804,791 in 1926. After deducting £1,000,000 general reserve, £400,000 preference dividends, £900,000 interim dividend on common and final dividend of 3s 6d amounting to £2,100,000 surplus was £185,921, against deficit of £9,209 in previous year. Profit and loss surplus on December 31, last, was £1,222,718, compared with £1,036,797 at end of previous year.

American-La France & Foamite Corp., Elmira, reports for year ended Dec. 31, 1927, consolidated net loss of $445,303 after interest and extraordinary expenses, including reorganization and development, etc. This compares with net income of $682,102 equal after preferred dividends to 90c. a share on the 449,300 common shares ($10 par) outstanding in 1926.

E. I. du Pont de Nemours & Co. declares regular quarterly dividend of $2.50 on common and of $1.50 on debenture stock. Former is payable March 15, to stock of record March 1, and latter April 25 to stock of record April 10.

Freeport Texas Co. reports earnings of $5.24 a share in year ended Nov. 30, 1927, against $2.47 in preceeding twelve months. Net profit rose to $3,825,992, from $1,809,040.

Snia-Viscosa reports for 1927 profits of 45,000,000 lire, as compared with 98,000,000 lire in 1926, a decrease of 53,000,000 lire. No mention is made of a dividend.

Virginia Carolina Chemical Corp. declares regular quarterly dividend of $1.75 on prior preference stock, payable Mar. 1, to stock of record Feb. 15.

Union Carbide & Carbon Co. declares regular quarterly dividend of $1.50 payable April 2 to stock of record March 2.

Stock Dividends

Name of Company	Per Cent.	When Payable	Books Closed Days Inclusive
Acetol Products, class A (No. 1)	$.60	Mar. 15	Holders of rec. Mar. 5
American Metal, com. (quar.)	.75	Mar. 1	Feb. 19 to Mar. 8
Preferred (quar)	1¾	Mar. 1	Feb. 19 to Mar. 8
Amer. Smelting & Refining, pfd. (quar.)	1¾	Mar. 1	Holders of rec. Feb. 3
Anaconda Copper Mining (quar.)	.75	Feb. 20	Holders of rec. Jan. 14
Archer-Daniels-Midland Co., com. (quar.)	.75	Feb. 28	Holders of rec. Jan. 21
Preferred (quar.)	1	Feb. 28	Holders of rec. Jan. 21
Atlas Powder, com. (quar.)	1.00	Mar. 10	Holders of rec. Feb. 29
By-Products Coke, com. (quar.)	.50	Mar. 20	Holders of rec. Mar. 6
Calumet & Hecla Consol. Corp. (quar.)	.50	Mar. 15	Holders of rec. Feb. 28
Casein Co. of America, com. (quar.)	1¼	Feb. 15	Holders of rec. Feb. 7
Celanese Corp. of Am., 1st partic. pfd. (qu.)	1.00	Mar. 1	Holders of rec. Feb. 17
Celluloid Co., pref. (quar.)	1¾	Mar. 1	Holders of rec. Feb. 10
First preferred (quar.)	1.75	Mar. 1	Holders of rec. Feb. 10
Chesebrough Mfg. Consol. (quar.)	1.00	Mar. 30	Holders of rec. Mar. 10
Chile Copper Co. (quar.)	.62½	Mar. 30	Holders of rec. Mar. 2
Commercial Solvents, (quar.)	2	Apr. 1	Holders of rec. May 7
Dow Chemical, com. (quar.)	1.25	Feb. 15	Holders of rec. Feb. 1
Preferred (quar.)	1¾	Feb. 15	Holders of rec. Feb. 1
DuPont (E. I.) de Nemours, com. (quar.)	2.50	Mar. 15	Holders of rec. Mar. 1
Debenture stock (quar.)	1	Apr. 25	Holders of rec. Apr. 10
Eastman Kodak, com. (quar.)	1.25	Apr. 2	Holders of rec. Feb. 29
Common, extra	.75	Apr. 2	Holders of rec. Feb. 29
Preferred, (quar.)	1¾	Apr. 2	Holders of rec. Feb. 29
Federal Mining & Smelting, pfd. (quar.)	1¾	Mar. 15	Holders of rec. Feb. 24
Glidden Co., prior pfd. (quar.)	1¾	Apr. 1	Holders of rec. Mar. 15
Hercules Powder, pref. (quar.)	1¾	Feb. 15	Holders of rec. Feb. 4
International Salt (quar.)	1¼	Apr. 1	Holders of rec. Mar. 15
Liquid Carbonic Corp. (quar.)	.90	May 1	Holders of rec. Apr. 20
Matehieson Alkali Works, com. (quar.)	1.50	Apr. 2	Holders of rec. Mar. 16
Preferred, (quar.)	1¾	Apr. 2	Holders of rec. Mar. 16
Miami Copper Co., (quar.)	.37½	Feb. 15	Holders of rec. Feb. 1
Monsanto Chemical Works, com. (quar.)	.62½	Apr. 2	Holders of rec. Mar. 20
National Lead, pref. A, (quar.)	1¾	Mar. 15	Holders of rec. Mar. 2
Common, (quar.)	1.25	Mar. 31	Holders of rec. Mar. 16
Preferred B (quar.)	1¼	May 1	Holders of rec. Apr. 23
New Jersey Zinc	2	Feb. 10	Holders of rec. Jan. 20
Proctor & Gamble, com. (quar.)	2	Feb. 15	Holders of rec. Jan. 25
Preferred (quar.)	2	Feb. 15	Holders of rec. Jan. 25
6% preferred (quar.)	1½	Mar. 15	Holders of rec. Feb. 25
St. Joseph Lead (quar.)	.50	Mar. 20	Mar. 10 to Mar. 20
Extra	.25	Mar. 20	Mar. 10 to Mar. 20
Quarterly	.50	June 20	June 10 to June 20
Extra	.25	June 20	June 10 to June 20
Quarterly	.50	Sept. 20	Sept. 9 to Sept. 20
Extra	.25	Sept. 20	Sept. 9 to Sept. 20
Quarterly	.50	Dec. 20	Dec. 9 to Dec. 20
Extra	.25	Dec. 20	Dec. 9 to Dec. 20
Sherwin Williams Co., com. (quar.)	.75	Feb. 15	Holders of rec. Jan. 31
Common, extra	.12½	Feb. 15	Holders of rec. Jan. 31
Preferred (quar.)	1¾	Mar. 1	Holders of rec. Feb .15
Standard Oil of Ind. (quar.)	.62½	Mar. 15	Holders of rec. Feb. 16
Extra	.25	Mar. 15	Holders of rec. Feb. 16
Standard Oil of N. J., com., par $100 (quar.)	1	Mar. 15	Holders of rec. Feb. 25
Common, par $100 (extra)	.50	Mar. 15	Holders of rec. Feb. 25
Common, par $25 (quar.)	.25	Mar. 15	Holders of rec. Feb. 25
Common, par $25 (extra)	.12½	Mar. 15	Holders of rec. Feb. 25
Standard Oil of N. Y. (quar.)	.40	Mar. 15	Holders of rec. Feb. 17
Swan-Finch Oil Corp. pfd. (quar.)	.43¾	Mar. 1	Holders of rec. Feb. 10
Tennessee Copper & Chemical (quar.)	.12½	Mar. 15	Holders of rec. Feb. 29
Texas Gulf Sulfur (quar.)	1.00	Mar. 15	Holders of rec. Mar. 1
Union Carbide & Carbon (quar.)	1.50	Apr. 2	Holders of rec. Mar. 2
United Dyewood, Pfd. (quar.)	1¾	Apr. 2	Holders of rec. Mar. 13
U. S. Gypsum, com. (quar.)	.40	Mar. 31	Holders of rec. Mar. 15
Preferred (quar.)	1¾	Mar. 31	Holders of rec. Mar. 15
Virginia-Carolina Chem., prior pfd. (quar.)	1¾	Mar. 1	Holders of rec. Feb. 15
Wesson Oil & Snowdrift, pref. (quar.)	1¾	Mar. 1	Holders of rec. Feb. 15

U. S. Gypsum Co. declares regular quarterly dividends of 40 cents on common and 1¾ per cent. on preferred both payable March 31 to stock of record March 15. Charles W. Highley was elected director to succeed Harry E. Brookby, resigned. Other directors and officers were re-elected.

Celluloid Corp. reports net income for year ended Dec. 31, 1927, of $285,270 after all charges and after deducting proportion of profits accruing to predecessor company prior to date of merger and consolidation.

Standard Chemical Co., Ltd., Toronto, declares initial dividend of $1 a share, payable April 1 to holders of record Feb. 29.

The Industry's Bonds

1928 Feb. 29 High	1928 Feb. 29 Low	1928 High	1928 Low	1927 High	1927 Low	Sales from Jan. 1928 To Date	Total Sales 1927	ISSUE	Date Due	Int. %	Int. Period	Orig. (1) Offering $
								NEW YORK STOCK EXCHANGE				
105¾	105¼	106	104¼	105	99	561	2,453	Am. Agri Chem.	1941	7½	F. A.	30,000
102¾	102½	102¾	101	103¾	100½	356	2,935	Am. Smelt & Refin "A" 5%	1947	5	A. O.	...
108¼	108	108¾	107½	108¾	107¾	214	963	Am. Smelt & Refin "B" 6%	1947	6	A. O.	...
106	105¾	106¼	105¼	105¼	103¼	1,958	6,384	Anaconda Copper Mng.	1953	6	F. A.	100,000
110¼	110¼	113	110½	116¼	106½	1,742	6,454	Anaconda Copper Mng.	1938	7	F. A.	50,000
101¼	101	103¼	96½	97	87	1,463	2,507	Anglo Chilean	1945	7	M. N.	16,500
101½	101¼	103¾	101½	103½	100¼	244	891	Atlantic Refin.	1937	5	J. J.	15,000
102¾	102½	103½	102	102¾	100¾	43	148	By product Coke	1945	5½	M. N.	8,000
(e)102	...	102½	102½	104½	101½	5	409	Corn Product Refin.	1934	5	M. N.	10,000
...	...	...	...	101¾	90	...	647	Davison Chem Deb.	1931	6½	J. J.	3,000
109½	109½	117	109	111½	106	379	926	General Asphalt	1939	6	A. O.	5,000
(e)90	91	92	90	91¾	81½	44	203	Int. Agric. Corp.	1932	5	M. N.	30,000
80	80	81	79	...	...	35	345	Int. Agri. Corp. stamped, extended	1942	5	M. N.	7,020
115	114½	133	113	133½	104	1,185	6,329	Lig. Carbonic Corp.	1941	6	F. A.	5,000
106½	105½	107½	100½	102	98½	1,166		Montecatini	1937	7		
97¾	97¾	97¾	94½	95½	92½	122		Ex War	1937	7		
(e)115½	...	115½	113½	115	113¾	16	1,931	People's Gas & Coke	1943	6	A. O.	10,000
105¼	105¼	106	105	105½	101¼	70	621	Refunding	1947	5	M. S.	40,000
103½	103¼	104	103	104½	101¼	803	8,711	Standard Oil N. J.	1946	5	F. A.	120,000
(e)103	104	104	101½	101¾	98½	103	720	Tenn. Cop. and Chem.	1941	6	A. O.	3,000
(e)91	sale	91¼	91	95½	91	12	175	Va. Iron C. & C.				
								NEW YORK CURB				
(e)98¾	...	99½	97¾	99½	95¾	8	1,456	Agri. Mtge. Bk. of Col	1946	7	J.O.	...
98¾	98¾	99½	97	99½	96	6	1,316	Agri. Mtge. Bk. of Col.	1947	7	J.J. 15	3,000
...	...	...	...	101¾	99	...	852	Alum. Co. of Am.	1933	7	M. S.	60,000
102½	102½	102¾	101½	105½	105	804	9,696	Alum Co. of Am.	1952	5		
95	95	95½	94½	101¾	99	308	927	American Cyan.	1942	5	A. O.	5,000
101½	101½	101½	101½	102½	101½	257	1,843	Anaconda Cop.	1929	6	J. J.	25,000
100½	100½	100½	99½	99¾	95¾	773	799	Koppers Gas and Coke	1947	5	J. D.	25,000
103	103	103½	102½	103	98	33	937	Natl. Dist. Prod.	1935	6½	J. D. 15	3,500
97½	97¼	97¾	96¾	98	95½	1,626	2,882	Shawinigan W & P	1967	4½		
100½	100	...	...	100½	100	16	11	Silica Gel.	1952	6½		
99½	99	99½	98¾	99½	96	106	3,060	Solvay Am. Invest. Corp.	1942	5	M. S.	15,000
101½	101	101½	100¾	100½	99	540	3,825	Swift & Co.	1932	5	A. O.	50,000
...	...	...	...	99	90	...	...	U. S. Ind. Alc.	1941	6½	M. N.	...
103¾	103¾	103¾	102	103½	98½	120	1,795	Westavco Chlorine Prod.	1937	5½	M. S.	2,500
								BOSTON				
105½	105½	105½	105½	105	97½	(a) 1	6	Amer. Agri. Chem.	1941	7½	F. A.	30,000
(e)102½	102½	103	102½	102¾	101	26	305	Swift and Co.	1944	5	J. J.	50,000
								CHICAGO				
102¾	102¾	103	102¾	103¾	101¼	32	185	Swift and Co.	1944	5	J. J.	50,000
...	...	...	...	101½	99	...	88	Westvaco Chlorine Prod.	1937	5½	M. S.	2,000

(a) $500.

Air Reduction Earnings Up Though Dividend Is Lower

Air Reduction Co., Inc., reports for years ended Dec. 31, 1927, net income of $2,412,596, after all charges, equivalent to $10.74 a share on 224,597⅓ shares of common stock outstanding. This compares with $2,262,191 or $10.83 a share on 208,855 shares outstanding the previous year.

Company's consolidated income report shows gross income of $13,550,940; operating expenses of $8,818,233, leaving operating income of $4,732,706 from which were deducted reserves of $1,905,455. Additional compensation to officers and employees amounting to $117,362, was deducted in accordance with the company's plan, the amount being distributed in stock of the company and cash to the officers and some 200 employees. Taxes last year amounted to $297,292.

The consolidated balance sheet as of the end of last year shows total assets of $21,220,523; current assets of $9,259,128, including cash on hand and in bank of $3,076,368 and current liabilities of $694,791.

Canadian Carbonate, Ltd., Montreal, issues 30,000 shares of no per shares to replace present outstanding capital stock. Following directors were elected: Hon. C. L. Stuart, president; J. R. Colby, vice-president and general-manager; E. R. Whiting, secretary; W. A. Tackaberry, treasurer; Dr. E. D. Collins, G. M. Campbell, H. P. Silsby and W. B. Clark, directors.

Bonds Called for Redemption

Already Listed

Agri. Mtge Bank, (Rep. of Columbia) gtd. 20 yr. 7s., 1947	not stated
Alpine Montan Steel Corp. 1st, 7s, 1955	Mar. 1, 1928
Bohn Aluminum & Brass Corp. 1st, 7s, 1934	Mar. 1, 1928
Canada Cement Co., Ltd., 1st, 20 yr. 6s, 1929	Mar. 3, 1928
Cespedes Sugar 1st, 7s, 1939	Mar. 1, 1928
Lake Superior Paper Co. Ltd., 1st, 30 yr., 6s, 1941	Mar. 1, 1928
McKeesport Tin Plate Co 1st, (closed) 20 yr., 6s, 1946	Mar. 1, 1928
Mid Continent Petroleum Corp. 1st, 15 yr., 6½s, 1940	Mar. 1, 1928
Phenix Cheese Corp. 5 yr. deb. 6s, 1929	Mar. 1, 1928
Southern Paper Co., 1st, 6½s, 1937	Feb. 20, 1928

Previously Unlisted

Alpine Montan Steel Corp. 1st, 7s, 1955	Mar. 1, 1928
Diamond Crystal Salt Co. deb. 6s, 1927-37	Mar. 1, 1928
Eddy Paper Co., 1st, 10 yr., 7½s, 1931	May 1, 1928
International Silver Co. 1st, 6s, 1948	To be retired
Mid Continent Petroleum Corp. 1st, 15 yr., 6½s, 1940	Mar. 1, 1928
Newaygo Portland Cement Co., 6½% notes, 1936	Feb. 1, 1928
Penna. Steel Co., Cornwall Ore Banks, 5s, 1932	Apr. 1, 1928
Pgh Steel Products Co., 1st, 6s, 1937	To be retired
Public Drug Co. 7% notes, 1937	Mar. 1, 1928
Sabin Robbins Paper Co., 1st ser., 6s, 1928-36	Mar. 1, 1928
Standard Oil Co. of N. Y., 12 yr., deb. 6½s, 1933	May 1, 1928
United Drug Co., 20 yr., 6s, 1944	Apr. 15, 1928
United States Refractories Corp., 1st, 6s, 1942	Apr. 1, 1928

Courtaulds, Ltd., declares a £12,000,000 stock dividend, amounting to over 100 per cent. and increases capitalization of Viscose Co., American subsidiary, by approximately £8,000,000, bringing total capitalization of latter company to £18,000,000 or $90,000000.

The Industry's Stocks

1928 Jan. 31st Bid	1928 Jan. 31st Asked	1928 High	1928 Low	1927 High	1927 Low	Sales In Jan.	Sales Since Jan. 1, '27	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	Earnings $-per share-$ 1926
178	180½	198½	177½	199½	134½	48,700	455,833	Air Reduction	No	223,445	$5.00	9 mo. 12.63	10.83
150½	151	158½	146	169½	131	287,300	3,695,266	Allied Chem. & Dye	No	2,178,109	6.00		9.79
123½	125½	125½	122½	124	120	2,160	24,733	7% pfd	100	392,849	6.00		61.28
18½	18½	21½	15½	21½	8½	60,120	279,066	Am. Agricultural Chem	100	333,221	2.00	Nil	...
60	60½	71½	55½	72½	28½	70,820	378,066	pfd	100	284,552	1.50		3.59
76½	77	82½	70½	77½	43½	1,586,920	7,528,433	American Can	25	2,473,918	2.00	4.11	4.38
140½	143	140½	136½	141½	126	5,060	26,916	pfd	100	412,333	7.00	31.66	33.31
70½	70½	78½	56½	72½	20½	400,620	1,062,966	American Linseed	100	167,500	...		...
94½	94½	96½	86½	92½	46½	20,480	216,550	pfd	100	167,500	7.00	7 mo. 6.00	.62
40½	41	46½	40	49½	36½	45,720	224,866	American Metal Ltd	No	594,278	4.00	9 mo. 3.64	3.88
117½	118	119½	110½	113½	108	8,176	6,156	pfd	100	50,000	7.00	9 mo. 50.27	53.15
172½	172½	184½	169	188½	132½	364,620	4,567,133	Amer. Smelt and Refin	100	609,980	7.50	6 mo. 19.64	23.38
133½	134½	135	131½	133	119½	6,280	35,710	pfd	100	500,000	7.00	6 mo. 17.01	35.52
15½	16	18½	6½	10½	5½	162,000	80,800	Amer. Zinc & Lead	25	193,120	...	9 mo. Nil	...
66½	68	77	40	51½	35	136,540	119,600	pfd	25	96,560	...	9 mo. 2.31	...
54½	54½	59½	53½	60½	41½	442,220	1,493,200	Anaconda Copper Mining	50	3,000,000	3.00		4.74
55½	56½	61	55½	63	38	16,780	132,443	Archer Dan. Mid	No	200,000	...	5.76	6.35
113½	113½	114	112½	112½	106	650	3,347	pfd	100	43,000	7.00	37.31	35.23
64½	66	67½	63	70	56½	6,900	25,593	Atlas Powder Co	No	260,393	4.00	5.75	7.04
107	108	109	102½	107	98	788	6,398	pfd	100	90,000	6.00	6 mo. 22.71	26.46
102	103	109½	95½	131½	104	113,880	1,000,933	Atlantic Refining	100	500,000	...	9 mo. Nil	11.24
6½	6½	7½	4½	5½	3½	80,620	109,700	Butte Copper & Zinc	5	600,000	.50	9 mo. 0.09	.32
10½	10½	12½	9	11½	7½	33,860	126,433	Butte Superior Mng	10	290,197	2.00	9 mo. 0.23	1.71
65½	66½	74½	65½	92½	66	12,120	163,600	By Prod. Coke	No	189,931	3.00	9 mo. 4.84	6.00
2	2½	2½	1½	2½	1½	60,060	125,133	Calla Lead & Zinc	10	723,355	...	9 mo. 0.08	...
21½	21½	23½	20½	24½	14½	213,320	378,300	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
58½	58¾	62½	54½	55½	42	228,320	718,833	Certainteed Prod	No	307,000	4.00	9 mo. 6.07	6.02
120½	...	120	119	118½	106	2,200	4,800	1st pfd	100	43,000	7.00	9 mo. 56.80	54.30
38½	39	42½	37½	44½	33½	202,430	1,380,733	Chile Copper	25	4,435,595	2.50	6 mo. 0.62	2.65
89	90	98½	88	101½	66½	31,740	354,133	Columb Carbon	No	204,131	4.00	9.41	6.51
165	165½	169½	153½	203	145	64,300	382,220	Commercial Solvents	No	108,861	4.00	9 mo. 9.24	14.13
88½	89	92½	80½	86½	58½	198,960	247,200	Cont. Can	No	620,000	6.00	7 mo. 7.54	6.36
125	126	125½	123	126	120	480	3,650	pfd	100	52,930	7.00	7 mo. 86.82	70.55
67	67½	71½	64½	68	46½	404,100	2,910,725	Corn Products	25	2,530,000	2.00	9 mo. 4.01	4.03
138½	140	140½	138½	142½	128	1,400	14,206	pfd	100	250,000	7.00	9 mo. 47.62	47.73
36½	37	46½	34½	48½	26½	184,460	919,100	Davison Chem	No	310,000	...		...
50½	51	52½	40	42½	36½	155,700	126,466	Devoe & Rayn A	No	95,000	2.40	(†) 5.47	5.22
113	113½	115½	108	114½	101	310	3,130	1st pfd	100	18,096	7.00	6 mo. 53.23	49.70
115	115½	120½	115½	118	105½	3,540	35,100	Dupont deb	100	795,212	6.00	9 mo. 57.04	52.51
325	327	335	310	343½	168	104,960	1,996,300	Dupont de Nemours	No	2,661,658	9.50	15.45	13.98
164	165½	171½	163	175½	126½	44,240	1,364,700	Eastman Kodak	No	2,055,340	5.00		9.50
129½	130	130	129	131½	119½	232	2,173	pfd	100	61,657	6.00		322.11
120	135	140	140	97	75½	300	30,200	Fed. Mining & Smelting	100	50,400	...		35.95
68½	68¾	74½	66	71½	46½	568,220	3,246,500	Fleischmann	No	4,500,000	3.00	4.30	4.08
70	71	109½	65½	106½	34	1,109,220	4,443,100	Freeport Texas	No	729,733	4.00	9 mo. 5.24	2.48
77½	78	93½	71½	96½	65	590,500	2,539,100	General Asphalt	100	243,550	...	6 mo. 5.00	8.11
118	122½	140½	114	144½	107½	8,100	38,700	pfd	100	68,742	5.00	6 mo. 4.20	27.58
21½	21½	24½	20½	22	14½	225,680	497,900	Glidden	No	400,000	2.00	3.03	3.41
97½	98	99½	95	101	86	5,626	19,300	pfd	100	71,922	7.00	6 mo. 23.91	25.98
92	92½	105½	71	78½	42	1,098,020	1,093,900	Gold Dust	No	318,586	...	6.20	3.07
64½	64½	69½	64½	70½	43½	25,540	267,400	Household Prod	No	575,000	3.50	6 mo. 5.22	5.22
13½	14	15½	13	16½	6½	19,400	107,800	Intern. Agri	No	441,695	...	Nil	1.60
56	58	60	52	65	33	6,400	75,200	pfd	100	100,000	...	Nil	14.06
81½	81½	99½	73½	89½	38½	2,576,900	5,847,700	Intern. Nickel	25	1,673,374	2.00	9 mo. 2.26	3.00
112½	123			110	103½	3,400	3,470	pfd	100	89,126	6.00	9 mo. 46.94	62.35
63	64	68½	63	75	63	378	2,696	Intern. Salt	100	60,771	6.00	6 mo. 2.64	8.35
56	66	77½	63½	78½	45	126,400	406,800	Liquid Carbonic Corp	No	125,000	3.60	5.90	11.34
49	50	51½	46	58½	43	6,740		Mac and Forbes	No	376,748	2.00	9 mo. 2.36	3.30
124½	125½	131½	118½	132½	82	58,160	352,400	Matheison Alk	No	147,207	6.00	9 mo. 11.27	9.88
115	116	117	115	120	103	280	1,720	pfd	100	24,750	7.00	9 mo. 74.06	67.85
18	18½	19½	17½	20½	13	61,400	228,300	Miami Copper	5	747,114	1.50		1.52

1928 Jan. 31st Bid	Asked	1928 High	Low	1927 High	Low	Sales In Jan.	Since Jan. 1, '27	ISSUES	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1927	1926
39¼	39½	58½	35½	56¼	17	225,940	1,418,400	National Dist. Prod	No	167,651	...	9 mo. 0.54	...
56	59	71¾	55	69½	43	13,960	113,400	pfd	No	109,795	...	9 mo. 1.62	...
124½	124¾	136	124	202¼	95	18,280	310,600	National Lead	100	206,554	8.00	8.90	35.33
139	139½	139	139	139½	131½	1,620	7,900	pfd A	100	243,676	7.00		
109	116	116½	113	116½	104¾	880	23,215	pfd B	100	103,277	6.00		
26½	26¾	28¾	22¾	27¼	19½	120,200	395,700	Penick & Ford	No	433,773	...	*9 mo. 1.48	1.37
168½	169	189½	157	168½	126	111,580	2,701,200	Peoples Gas Chi	100	60,000	8.00	11.15	11.04
40½	40¾	43¾	40½	43¼	36	37,120	146,800	St. Joseph Lead	10	1,951,517	2.50	1.85	4.21
38¼	39	40½	37¼	41¼	35½	339,420	2,274,700	Standard Oil Co of N. J	25	24,262,532	1.00		5.01
30	30½	31½	28¾	34½	29¼	356,180	1,478,700	Standard Oi lCo. of N. Y	25	17,023,928	1.60	0.90	1.9 4
10¾	10¾	11½	10½	13½	8¾	28,200	392,000	Tenn. Cop. & Chem	No	794,624	1.00		1.31
72	72¾	80½	68½	81¾	49	1,245,940	8,389,500	Texas Gulf & Sulfur	No	2,540,000	4.00	4.76	3.69
140½	141	145½	136½	154½	98¾	261,100	3,006,400	Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
6	8	11	5	10	3½	30	2,980	United Dyewood	100	139,183	7.00	9 mo. Nil	...
58½	60	65	45½	49	36½	310	3,943	pfd	100	39,500	...	6 mo. 2.72	3.88
108¼	109	117½	102¼	111¾	69	280,280	1,416,500	U. S. Ind. Alc	100	240,000	5.00	6.00	7.04
118½	121	120½	119	121	107½	570	785,900	pfd	100	60,000	7.00		35.16
48	48½	51¾	44¼	48¾	26½	29,900	261,900	Va. Car. Chem Com. 6% pfd	100	213,350	...		6.73
90½	90¾	92½	88½	91	73	8,690	39,900	7% pfd	100	142,910	7.00		17.54
High	**Low**							NEW YORK CURB					
30½	30½	31½	29½	31¾	30	26,020		Acetol Prod	No	60,000			
127	127	136	120	145½	67½	26,220	71,366	Aluminum Co. of America	No	1,427,625	...	4.02	...
...	...	36½	36	35¾	34	100	400	Aluminum Mf'g Co	No	325,860	2.00		...
...	...	45½	39¾	40½	26	1,260	1,200	Amer. Cyan. "A"	20	65,943	1.20	3.09	3.49
42¼	42¾	50	39	43½	25	84,040	56,300	"B"	20	263,772	1.20	3.09	3.49
15	14½	17⅞	14	18¼	3¼	31,740	259,133	Amer. Rayon Prod	No	110,000	1.00		Nil
26½	26	28	26	29	11	17,740	44,430	Amer. Solvents & Chem. pfd	No	160,000	...		Nil
29½	29	31½	26½	31½	14	20,200	224,100	Anglo Chile Nitrate	No	1,756,750	...	Loss	Loss
...	...	39½	36½	43½	22	2,280	43,833	Canad. Ind. Alc	No	800,000	1.28	2.49	2.63
81	81	100¾	77½	117	44	62,520	321,408	Celanese Corp of Am	No	1,000,000	...	1.91	1.80
110	110	122	110	129¼	60	10,200	68,083	Celluloid Co	100	70,980	...		...
91½	91½	97½	89	133¾	113¾	3,580	24,093	pfd	100	24,551	...		...
80	80	87½	80	91	84	1,780	18,683	Celotex pfd	No	164,730	3.00		5.06
120	130	149½	117½	126	76½	5,920	20,000	Chesebro Mfg Co	25	120,000	4.00		8.06
41	40¾	43½	36	38½	24¼	13,880	34,686	Courtaulds	£1	£12,000,000	16½%		18.18
196	196	196	192	202	180	118	590	Hercules Powder	100	147,000	16.37	9 mo. 16.37	18.18
118½	118½	121	118½	121	114	78	1,423	pfd	100	111,392	7.00	28.04	30.82
7½	7¾	9	4½	10	7½	1,380	28,500	Heyden Chem	10	150,000	...		0.32
18¾	18¾	22½	18	24¼	4¼	117,180	1,088,133	Indus. Rayon 'A"	No	452,544	...		2.27
...	...	124½	114½	126½	55½	139,460	1,459,800	Johns-Manville	No	750,000	...	9 mo. 4.59	4.34
46	46	49	38½	39	37½	2,960	2,266	Monsanto Chem	No	110,000	8.09	9 mo. 6.11	5.60
192	192	195	180½	194½	178	3,148	12,690	N. J. Zinc	100	490,816	8.00	14.34	14.34
86	86	95¾	85¼	112	60½	8,540	52,658	Palmolive Peet	No	1,500,000	...	5.04	2.86
96½	96½	100	92	105½	84	830	4,317	Penn Salt	50	150,000	5.00	8.09	6.08
9	9	9¾	9	14½	8	2,380	20,043	Pyrene Mfg	10	223,158	2%	6.42	2.38
(e)260	...	287	236	335	160	1,150	14,285	Royal Baking Powder					
...	...	108½	104	110	100	350	4,740	pfd					
66½	66½	67½	66	68½	44	350	10,425	Sherwin William	25	594,445	3.00	6.42	5.59
(e)17¾	...	19¾	17	20¾	13½	14,320	58,533	Silica Gel	No	600,000	...		...
75¼	74¼	80½	70¾	81½	64¾	255,220	2,073,800	Standard Oil Co. of Indiana	25	9,136,618	...		6.03
7¾	7¾	8¾	7¾	12	5	1,400	9,500	Snia Viscosa	150 lire	6,666,666⅔	.72		6.86
17	17	17¾	16	21	13¾	1,140	5,760	Swan & Finch	25	34,458	.87½		...
130½	129¾	133	125	130	115¼	10,880	26,817	Swift & Co	100	1,500,000	8.00	8.13	10.43
500	475	505	450	499	145	7,968	67,201	Tubize "B"	No	78,868	...		...
74	72	83	72	110¾	82½	6,715	29,892	U. S. Gypsum	20	687,875	8%	10.10	11.35
68	68	73	67	77	50½	21,500	153,745	Wesson Oil and Snow	No	300,000	4.00	5.26	8.71
Bid	**Asked**							CLEVELAND					
...	26½	...	...	27½	30		100	Am. Vitrified Prod	50	70,000	7.50	2.95	2.19
(e)110¾	110¾	110½	104	115	74½	1,134		Cleve-Cliff Iron	No	400,000	4.00		
135	135	140	112½	108	70	539	1,018	Dow Chem	No	100,000	4.00		...
106	106	107	105	106½	100	142	639	pfd	100	30,000	7.00		...
...	...	24½	21¼	21¼	15½	120	375	Glidden	No	400,000	2.00	3.03	3.41
98¼	98½	99	96	100	84	943	3,126	pfd	100	71,922	7.00	6 mo. 23.91	25.98
134	134	135	129¾	135	127	1,304	2,399	Grasselli	100	215,704	...	11.27	10.24
109	109	109	105½	109¼	102½	1,931	4,846	pfd	100	123,742	6.00		23.68
18¼	18¼	20½	18½	24¼	4¼	820	39,744	Indus. Rayon "A"	No	452,544	...		2.27
66	66	69	66	70	44	1,644	16,722	Sherwin William	25	594,445	3.00	6.42	5.59
102	102	109¼	102	109	104	1,024		pfd	100	125,000	6.00		...
25½	25½	...	...	...	...	...		Wood Chemical Prod. "A"	No	20,000	2.00		...
								PITTSBURGH					
22	22	25	22	33½	18	1,091	2,910	Am. Vitrified Prod	50	70,000	7.50	2.95	2.19
								CHICAGO					
51½	51½	60	49	86	53	5,783	98,024	Celotex	No	170,456	3.00	3.31	
83	83	87½	80	92	82	1,152	13,314	pfd	100	52,534	7.00		
47½	47	50	38½	39	37	18,967	26,498	Monsanto Chem	No	110,000	...	9 mo. 6.11	5.60
...	...	...	...	156½	127		321	People's Gas				11.15	
130	129½	132	124¾	130	115½	15,872	114,458	Swift & Co	100	1,500,000	8.00	8.13	10.43
...	...	143½	139½	152½	99	175	11,373	Union Carbide	No	2,827,470	6.00	9 mo. 6.64	9.07
74	73	93	73	110½	82	32,657	202,171	U. S. Gypsum	20	687,875	8%	10.10	11.35
Bid	**Asked**					(f)		CINCINNATI					
126	126	126	125	125¼	113½	114	360	Fleishmann pfd	100	12,295	6.00	1,589.49	1,501.80
252	251½	275	249	250	177	6,232	43,825	Proc. & Gam	20	1,250,000	4.75		9.17
...	...	65	60	62½	38	4,230	12,419	United States Can	No	62,500	...		3.00
103	103	103	100	103	97½	690	2,071	pfd	100	20,000	7.00		15.20
High	**Low**							BOSTON					
...	...	...	...	54	35½	...	728	Am. Agri. Chem. pfd					
21½	21¼	23¾	20½	17¾	14½	38,669	166,075	Calumet & Hecla	25	2,005,502	1.50	9 mo. 0.29	.75
...	...	...	...	120½	82½		1,420	Math Alk				11.27	
130	130½	133	124½	130½	115	4,348	22,317	Swift & Co	100	1,500,000	8.00	8.13	10.43
						(f)		ST. LOUIS					
(e)119¾	...	121	118½	...	...	305		Certainteed Prod. pfd	100			56.80	
46	46	47½	46	36	36	931	3,168	South Acid and Sulfur Co	No	52,000	3.00		...
								PHILADELPHIA					
94¾	94	100½	92	105½	74½	3,202	37,437	Penn. Salt	50	150,000	5.00	8.09	6.08
114½	114	117⅛	111½	118½	89½	148,073	829,285	United Gas Imp	50	2,130,088	...		4.59
Bid	**Asked**							MONTREAL					
33½	33	...	...	39½	20			Asbestos Corp	No	200,000	1.50		1.02
93	93	...	...	98	82½			pfd	100	74,561	7.00		
36½	35½	...	...	43½	21½			Canada. Ind. Alc	No	(d)800,000	1.28	2.49	2.63
95	94½	...	...	*277½	67			Shawinigan W. & P	No	1,100,000	2.00	2.63	
...	...	...	...	207	142			Sherwin William of Can	100	40,000	6.00	8.84	9.54
...	...	...	...	127	117			pfd	100	34,350	7.00		
Bid	**Asked**					(f)		BALTIMORE					
...	...	...	...	39½	37		1,340	Davison Chem	No	310,000	...		...
17	18	19½	18	20½	15	6,123	19,836	Silica Gel	No	600,000	...		...
								UNLISTED					
158	165	...	...	...	...			Casein Co	100	21,196	7.00		7.10
74	77	...	...	89	55			Merck & Co pfd	100	33.950	4.00		7.60
90	94	...	...	...	...			Merrimac	50	70,560	...		...
141	145	...	...	...	...			Newport Chem	1	912,198	4%		

*Old stock. † Combined A & B. (b) June 18 to Dec. 30. (d) 1927 earnings on 969,480. (e) Bid & Asked. (f) Thru Jan. 28 (g) High low.

The Trend of Prices

Consuming Interest Has Declined Since The Early Part Of February

Prices In General Have Not Weakened—Anhydrous Ammonia Very Scarce—Ammonia Persulfate Advances—Chlorate of Soda Lower On Imported Competition—Copper Sulfate Strong—Mercury and Glycerin Continue Easy—Sulfate of Ammonia In Small Supply.

A consensus of opinion among most factors seems to show a noticeable lack of any consuming interest in the market for the past two or three weeks. This should not be taken to mean that there is an easy tone to the market in general, for such is not the case. It does mean that there has been a noticeable slackening in consumer interest since the first of the year. However, manufacturers are not pressing to sell as the volume of contract business on a majority of items placed by February 1 was very satisfactory to them and there is no necessity to press for sales at this time.

Probably the outstanding item of interest has been the recent reduction in the domestic makers' price of sodium chlorate. There have been recent importations of sodium chlorate and the domestic makers have cut the price rather sharply and are now underselling the best imported effort by from ¼c to ½c per pound. It is said that the cost of the imported material is well above that level now being quoted by American makers.

The strength of anhydrous and aqua ammonia have been of prime interest during the month just past. This condition has been existent since the contract season has been under way and some sellers are now sold up to their capacity for the duration of the present contract season. In this respect ammonia is probably the strongest of this group. Sellers admit that the volume of spot business at the moment is not large, but they are not pressing for sale. Liquid chlorine, bleaching powder and soda ash are experiencing a fair sale, but most of this business was cared for by contracts and work on these items has been principally on taking care of these committments.

Ammonium persulfate, usually a quiet item from a price change angle, has been precipitated upward since our last report by reports of a new and extensive use for this article in treating furs. While this process is still in the experimental stage, several large consumers are interested in the purchase of supplies and the market has advanced about 7c per pound as a result. Though no immediate further advance is looked for the position of the market at this level is very firm.

Mercury, Glycerin Still Easy

Mercury continues to show an easy turn. Over the month just past the market has shown a net loss of $1.00 a flask. This would not indicate nany particular signs of weakness, but as the decline has been steady since the peak of last Fall, the market gives the appearance of gradually settling to something nearer its normal level. Dealers on this market admit that further recessions are not unlikely, though they qualify this by stating that a counter recovery is also likely. The foreign market is about in the same position and there is no pressure on the dealers here to sell from that direction. Stocks here are about normal. Glycerin has likewise continued to decline, despite continued predictions since the first of the year that the fall in price was at its end. While there has not been any further actual reduction in the open market quotations for dynamite, reports are current of shading from the quoted levels. Sales are very limited at this writing as consumers are reluctant to buy with the market in its present state and sellers are endeavoring to hold to the openly quoted levels in order to add strength to the market. Stocks are still in good supply and any show of strength at this time is not looked for. The prospects of a better demand from the explosives trade with the approach of Spring is the only bright spot for the producers. The other grades, chemically pure, saponification and lye are also very routine and unsteady at the quoted levels.

The reduction in the price of ammonium chloride earlier in the year has had the effect of killing off imported competition and increasing domestic sales to some extent. Otherwise the market is ridding along at a normal gait. Sales to the battery trade have shown a falling off, but this was expected, and sellers are satisfied with results in other directions. Domestic manufacturers have the market for zinc ammonium chloride fairly well in hand and have been meeting imported competition without any great shading in the consummation of business. Following the entry of a new factor in the manufacture of calcium chloride the price was reduced early in February. Since then sales have been up to expectations for the season. As the annual demand for calcium chloride has been on the increase, sellers expect that with a favorable summer, 1928 sale should be well in excess of any previous year.

The openly quoted price on completely denatured No. 1 and completely denatured No. 5 have been reduced. No particular reason is advanced for the decline, but as the market was being shaded in all directions prior to the decline, this move probably represents a readjustment to the true market value. Stocks of alcohol in this territory have been reduced of late and conditions in the Metropolitan district are better than for some time past.

Copper Sulfate Holds Strength

Copper sulfate has retained its very strong position. Sellers notice a falling off in the demand from insecticide manufacturers this being attributed to various reasons, the most logical of which seems to be that there is quite a carry-over of stocks in the flood districts of the Mississippi River. Otherwise the demand is very good with agricultural consumers expected to come into the market soon for sizeable quantities. In fact, some large business has already been done in this direction at the prevailing market figures. Should the demand come up to expectations with stocks in their present condition, another advance is not unlikely.

Stocks of sulfate of ammonia are in very short supply and the price has been rapidly firming. Sales are being made in very restricted quantities with no indications of replacements. In some quarters this condition is expected to increase the demand for nitrate of soda, which to date has not shown strength. Sizeable quantities of nitrate have been shipped to Germany from Chile, according to reports, to compete with the synthetic there and will be offered for sale at a price equivalent to $2.15 100 pounds, New York. This is taken to mean that there is an over-supply in Chile and that an outlet is looked for. Other fertilizer materials are generally firm and moving in a steady manner. The season for fishscrap has not opened yet and the market is still nominal.

Activity in the oils and fats group has not been particularly striking. In general the tendency of the market is downward. In contract to this movement, denatured olive oil, which because of the big crop was expected to take a sharp drop has shown a form reversal and is higher. This is explained by the fact that producers in Spain are storing their oil on the other side rather than offer freely to dealers. The tendency of Chinawood, cottonseed and the animal oils is downward and even corn oil which might be expected to advance based on the higher raw material markets has shown a weaker tendency.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - Feb. 1928 68.4c

Acetone — Despite rumors of lower prices, dealers in this district continue to quote 13c lb. in drums. The market is well maintained at this level and no change in price is anticipated for some time to come. Demand is up to expectations.

Acid Acetic — The market has a steady tone with business principally centered around contract deliveries. Interest is about normal at levels of $3.38 100 lbs. for 28% material and $11.92 100 lbs. for glacial.

Acid Citric—The market is in domestic manufacturers' hands. A firm condition prevails and sellers are having no trouble in getting 44½c lb. for crystals and 45½c lb. for powdered. With the approach of the consuming season a stronger market is looked for.

Acid Cresylic — There has been no change from the firm position of a month ago and importers are doing a fairly good volume of business at 74c gal. for spot offerings of pale.

Acid Lactic — Following the reduction last month the market has been holding fairly steady with a fair consuming interest at 4¼c @ 5¼c lb. for 22% dark; 10c @ 10½c lb. for 44%; 5⅛c @ 6¼c lb. for 22% light and 12c @ 12½c lb. for 44% dark.

Acid Muriatic — Has shown no change over the month just past and sellers are maintaining the contract price of $1.00 per 100 pounds for 18 degree material in tank cars; $1.10 per 100 lbs. for 20 degree material in tanks and $1.60 100 lbs. for 22 degree material in tanks.

Acid Oxalic — The healthy demand which has been in force for some time has been prevalent over the past month and sellers are still moving their output up to capacity without trouble. Sales were made last week ranging from 11c @ 11½c lb. as to quantity ordered.

Acid Sulfuric — On a fairly good demand the market is well maintained and manufacturers are holding the price at the openly quoted levels.

Acid Tartaric — Has shown considerable strength of late as a result of which American manufacturers advanced the

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
.....	.24	.24	.24	Acetaldehyde, drs 1c-1 wks...lb.	.24	.26	.26	.24
.....	.20	.20	.20	Acetanilid, tech, 150 lb bbl....lb.	.23	.24	.24	.23
.....	.29	.29	.29	Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.29	.35	.35	.29
.....	.38	.32	.37	Acetin, tech drums.....lb.				
.02½	.12	.12	.12	Acetone, CP, 700 lb drums c-1 wks.....lb.	.....	.13	.13	.13
1918	1.65	1.65	1.65	Acetone Oil, drs NY.....gal.	1.65	1.75	1.75	1.65
.....	.42	.42	.42	Acetyl Chloride, 100 lb cby...lb.	.42	.45	.45	.42
				Acids				
1.50	3.38	3.38	3.38	Acid Acetic, 28% 400 lb bbls c-1 wks.....100 lb.	.....	3.38	3.38	3.38
.....	11.92	11.92	11.92	Glacial, bbl c-1 wk...100 lb	.....	11.92	11.92	11.92
.....	.98	.98	.98	Anthranilic, refd, bbls.....lb.	.98	1.00	1.00	.98
.....	.80	.80	.80	Technical, bbls.....lb.	.....	.80	.80	.80
1.00	1.60	1.25	1.38	Battery, cbys.....100 lb.	1.60	2.25	2.25	1.60
.23	.57	.57	.57	Benzoic, tech, 100 lb bbls...lb.	.57	.60	.60	.57
.07½	.08½	.08½	.08½	Boric, crys. powd, 250 lb bbls.....lb.	.08½	.11	.11	.08½
.....	1.25	1.25	1.25	Broenner's, bbls.....lb.	.....	1.25	1.25	1.25
1917	.85	.80	.84	Butyric, 100% basis cbys...lb.	.85	.90	.90	.85
1917	4.90	4.85	4.89	Camphoric.....lb.	.....	4.85	4.85	4.85
.....	.25	.25	.25	Carbolic, 10%, 50 gal bbls..lb.	.25	.28	.28	.25
....	.15	.15	.15	Chlorosulfonic, 1500 lb drums wks.....lb.	.15	.16	.16	.15
1918	.37	.25	.29	Chromic, 99%, drs extra...lb.	.25	.30	.30	.25
.....	1 00	1.00	1.00	Chromotropic, 300 lb bbls..lb.	1.00	1.06	1.06	1.00
.53	.44½	.43	.43¾	Citric, USP, crystals, 230 lb bbls.....lb.	.44½	.55	.44½	.55
.....	.95	.95	.95	Cleve's, 250 lb bbls.....lb.	.95	.97	.97	.95
1918	.60	.57	.61	Cresylic, 95%, dark drs NY..lb.	.68	.70	.70	.68
1918	.70	.60	.63½	97-99%, pale drs NY....lb.	.....	.74	.74	.72
1918	.11	.10	.10½	Formic, tech 85%, 140 lb cby.....lb.	.11	.12	.12	.11
1918	.50	.50	.50	Gallic, tech, bbls.....lb.	.50	.55	.55	.50
1918	.74	.69	.72	USP, bbls.....lb.	...	.74	.74	.74
.....	1.00	1.00	1.00	Gamma, 225 lb bbls wks...lb.	1.00	1.06	1.06	1.00
1918	.57	.57	.57	H, 225 lb bbls wks.....lb.	.57	.63	.63	.57
.....	.67	.65	.65¼	Hydriodic,USP,10%soln cbylb.	...	.67	.67	.67
.....	.45	.45	.45	Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.48	.45
				Hydrochloric, CP, see Acid Muriatic.....				
.....	.80	.80	.80	Hydrocyanic, cylinders wks lb.	.80	.90	.90	.80
.03	.06	.06	.06	Hydrofluoric, 30%, 400 lb bbls wks.....lb.	.....	.06	.06	.06
.....	.11	.11	.11	Hydrofluosilicic, 35%, 400 lb bbls wks.....lb.	.....	.11	.11	.11
.....	.85	.85	.85	Hypophosphorous, 30%, USP, demijohns.....lb.	.....	.85	.85	.85
.019	.05½	05½	.05½	Lactic,22%,dark,500 lb bbls lb.	.04¾	.05½	.06	.04¾
.04	.13	.13	.13	44%, light, 500 lb bbls ...lb.	.12	.12½	.13½	.12
.....	.52	.52	.52	Laurent's, 250 lb bbls.....lb.	.52	.54	.54	.52
.....	.60	.60	.60	Metanilic, 250 lb bbls.....lb.	.60	.65	.65	.60
1918	.07¾	.07¾	.07¼	Mixed Sulfuric-Nitric drs wks.....N unit	.07¼	08	.08	.07¼
1918	.01	.01	.01	drs wks.....8 unit	.01	.01½	.01½	.01
.....	.21	.18	.19½	Monochloroacetic, tech bbl.lb.	.18	.21	.21	.18
.....	1.65	1.65	1.65	Monosulfonic, F Delta bbls.lb.	.....	.65	.65	.65
1.15	1.35	1.35	1.35	Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	.....	1.35	1.35	1.35
1.30	1.70	1.70	1.70	20 degrees, cbys wks..100 lb.	1.70	1.80	1.80	1.70
.....	.95	.95	.95	N & W, 250 lb bbls.....	.95	.95	.95	.95
1918	.55	.55	.55	Naphthionic, tech, 250 lb .....lb.	.55	.59	.59	.55
3.37½	5.00	5.00	5.00	Nitric, 36 deg, 135 lb cbys c-1 wks.....100 lb.	.....	5.00	5.00	5.00
4.50	6.00	6.00	6.00	40 deg, 135 lb cbys, c-1 wks.....100 lb.	.....	6.00	6.00	6.00
.07½	.11½	.11	.11	Oxalic, 300 lb bbls wks NY..lb.	.11	.11½	.11½	.11
.036	.08	.07	.07½	Phosphoric 50%, 150 lb cby.lb.	.08	.08½	.08½	.08
.23	.19	.16	.16½	Syrupy, USP, 70 lb drs...lb	.....	.16	.16	.16
1918	.50	.50	.50	Picramic, 300 lb bbls.....lb	.....	.50	.50	.50
.50	.45	.30	.41½	Picric, kegs.....lb.	.40	.50	.50	.40
.....	.86	.86	.86	Pyrogallic, technical, 200 lb bbls.....lb.	.....	.86	.86	.86
.22½	.27	.27	.27	Salicylic, tech, 125 lb bbl...lb.	.27	.32	.32	.27
1918	.15	.15	.15	Sulfanilic, 250 lb bbls.....lb.	.15	.16	.16	.15
1.00	1.60	1.60	1.60	Sulfuric, 66 deg, 180 lb cbys 1c-1 wks.....100 lb.	1.60	1.95	1.95	1.60
1.00	1.20	1.20	1.20	1500 lb dr wks.....100 lb.	.....	1.20	1.20	1.20
.87½	1.10	1.10	1.10	60°, 1500 lb dr wks..100 lb.	.....	1.12½	1.12½	1.12½
1.25	1.50	1.50	1.50	Oleum, 20%, 1500 lb drs 1c-1 wks.....100 lb.	.....	1.52½	1.52½	1.52½
.....	42.00	42.00	42.00	40%, 1c-1 wks net.....ton	.....	42.00	42.00	42.00
.55	.30	.30	.30	Tannic, tech, 300 lb bbls...lb.	.30	.40	.40	.30
.30½	.37	.29½	.32½	Tartaric, USP, crys, powd, 300 lb bbls.....lb.	.35	.36	.36	.34½
.....	.85	.85	.85	Tobias, 250 lb bbls.....lb.	.....	.85	.85	.85

LACQUER SOLVENTS

CELLOSOLVE

(Ethylene Glycol mono ethyl ether)

Boiling Point	134.8°C	Acidity	None
Boiling Range	Initial 128°C	Specific Gravity	0.927—0.933
	Dry Point 137°C	Weight per gallon	7.8
Dilution Ratio	6.25 volumes of Toluene (10% cotton solution)		

Cellosolve is the most powerful nitrocellulose solvent commercially available. Its lack of odor makes it particularly valuable in the manufacture of brushing lacquers, architectural lacquers and lacquers for natural or artificial leathers.

CELLOSOLVE ACETATE

(Ethylene Glycol mono ethyl ether acetate)

Boiling Point	154°C	Acidity	Not more than 0.01% (as acetic)
Boiling Range	Initial 140°C	Specific Gravity	0.973—0.982
	Dry Point 165°C	Weight per gallon	8.1
Dilution Ratio	2.6 volumes of Toluene (10% cotton solution)		

Cellosolve acetate is particularly valuable as a retarder and blush resister. It is being widely used in thinners for automobile base lacquers and in the manufacture of "mist coats."

BUTYL CELLOSOLVE

(Ethylene Glycol mono butyl ether)

Boiling Point	170.6°C	Acidity	None
Boiling Range	Initial 163°C	Specific Gravity	0.900—0.905
	Dry Point 174°C	Weight per gallon	7.6
Dilution Ratio	4.00 volumes of Toluene (10% cotton solution)		

Until now there has never been a good nitrocellulose solvent having a boiling range between the usual "high boilers" and the plasticizers. Butyl Cellosolve fills this gap. It is also an excellent gum and resin solvent. The incorporation of small quantities in lacquers insures gradual and even setting of the film with high gloss and absence of orange peel.

CARBIDE AND CARBON CHEMICALS CORPORATION

Carbide and Carbon Building

30 East Forty-second Street, New York City

UCC

Unit of Union Carbide and Carbon Corporation

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - Feb. 1928 68.4c

price 1c lb. in all directions last week. They are having no trouble in getting the new level of 35c @ 36c lb.

Albumen — Slack demand for egg albumen continues prevalent, resulting in further price reduction during the month. Edible is now quoted at 80c lb. and technical at 73c lb., in a weak market. Status of blood and vegetable continues unchanged.

Alcohol — Has been devoid of any exciting features during the month. Sellers maintain that stocks are in less plentiful supply now than was the case at the turn of the year. This condition likewise applies to the Metropolitan district where the market has been the weakest for some months past. Makers look to a good business during the Spring months and at present the market for completely denatured No. 1 is named at 48½c gal. in drums and No. 5 completely denatured at 47c gal. in drums and 41c gal. in tanks.

Alcohol, Butyl — Leading manufacturers announced a reduction in the scheduled price last week. The schedule is now at 17.75c lb. and sellers report a good sale at this level.

Ammonia — Makers of anhydrous have experienced a very good sale in all quarters and in some instances the output of the year has been taken care of. With this condition existing there is little, if anything, in the way of spot business being done at the moment. The price of 13½c @ 14c lb. is held firmly in all directions. Aqua is in much the same position with the schedule named at 3c @ 3¼c lb.

Ammonium Chloride — The market is characterized by a lack of imported competition this month. Importers apparently do not care to meet the domestic price and American makers are taking practically all the business there is available. Carloads are quoted at $4.70 100 lbs. in the New York district with a range to $5.25 100 lbs. as to quantity sold. Outside of New York the price is at $4.65 100 lbs. f. o. b. shipping point. Demand is about normal.

Ammonium Persulfate — With reports of a new consuming channel which will take fair sized quantities, the spot market has advanced sharply over the month. Makers report sales during the last two weeks at 35c @ 40c lb. and this level is expected to be maintained for the present at least.

Ammonium Sulfate — Stocks are becoming exceedingly short and the

1914 July	1927 High	1927 Low	1927 Aver.			Current Market	1928 High	1928 Low
.....	2.75	2.00	2.60	Trichloroacetic, bottles	lb.	.....	2.75	2.75	2.75
.....	2.00	2.00	2.00	Kegs	lb.	.....	2.00	2.00	2.00
.....	1.00	1.00	1.00	Tungstic, bbls	lb.	1.00	1.25	1.25	1.00
.19	.45	.45	.45	Albumen, blood, 225 lb bbls	lb.	.45	.55	.55	.45
.40	.95	.80	.87	Egg, edible	lb.	.....	.80	.82	80
.....	.92	.77	.82	Technical, 100 lb drs	lb.	.....	.73	.80	.73
1918	.60	.60	.60	Vegetable, edible	lb.	.60	.65	.65	.60
.....	.50	.50	.50	Technical	lb.	.50	.55	.55	.50
.....	.20	.19	.19½	Alcohol Butyl, Normal, 50 gal drs c-l wks	lb.	.....	.20	.20	.20
.....	.20½	.19½	.19½	Drums, lc-l wks	lb.	.....	.19½	.19½	.19½
.....	.19½	.18½	.19	Tank cars wks	lb.	.....	17.75	.19	.19
.....	.....	.....	.....	Amyl (from pentane)					
.....	.....	.....	.....	drs c-l wks	gal.	1.90	2.25	2.25	1.90
1.70	1.70	1.70	1.80	Diacetone, 50 gal drs del	gal.	1.70	1.80	1.80	1.70
2.50	3.70	3.70	3.70	Ethyl, USP, 190 pf, 50 gal bbls	gal.	.....	3.70	3.70	3.70
.....	.50	.50	.50	Anhydrous, drums	gal.	.50	.55	.55	.50
1919	.52	.37½	.46	Completely denatured, No. 1, 190 pf, 50 gal drs drums extra	gal.	.....	.48½	.52	.48½
1918	.50	.29	.42	No. 5, 188 pf, 50 gal drs. drums extra	gal.	.....	.47	.50	.47
.....	.46	.25	.40	Tank, cars	gal.	.....	.41	.46	.41
.....	1.00	1.00	1.00	Isopropyl, ref, gal drs	gal.	1.00	1.25	1.25	1.00
.....	1.00	1.00	1.00	Propyl Normal, 50 gal dr	gal.	.....	1.00	1.00	1.00
.....	.80	.80	.80	Aldehyde Ammonia, 100 gal dr lb		.80	.82	.82	.80
1918	.65	.65	.65	Alpha-Naphthol, crude, 300 lb bbls	lb.	.....	.65	.65	.65
1917	.35	.35	.35	Alpha-Naphthylamine, 350 lb bbls	lb.	.35	.37	.37	.35
1.75	3.25	3.15	3.08½	Alum Ammonia, lump, 400 lb bbls, lc-l wks	100 lb.	3.25	3.30	3.30	3.25
5.00	5.25	5.25	5.25	Chrome, 500 lb casks, wks	100 lb.	5.25	5.50	5.50	5.25
4.00	3.50	3.10	3.43	Potash, lump, 400 lb casks wks	100 lb.	3.10	3.20	3.20	3.10
5.00	5.25	5.25	5.25	Chrome, 500 lb casks wks	100 lb.	5.25	5.50	5.50	5.25
.....	3.75	3.75	3.75	Soda, ground, 400 lb bbls wks	100 lb.	.....	3.75	3.75	3.75
17.00	27.00	26.00	26.08	Aluminum Metal, c-1 NY	100 lb.	.....	26.00	26.00	26.00
.....	.35	.35	.35	Chloride Anhydrous, 275 lb drums	lb.	.35	.40	.40	.35
.12	.17	.17	.17	Hydrate, 96%, light, 90 lb bbls	lb.	.17	.18	.18	.17
.....	.23	.23	.23	Stearate, 100 lb bbls	lb.	.23	.24	.24	.23
1.25	1.75	1.75	1.75	Sulfate, Iron, free, bags c-1 wks	100 lb.	.....	1.75	1.75	1.75
.87½	1.40	1.35	1.35½	Coml, bags c-1 wks	100 lb.	.....	1.40	1.40	1.40
.....	1.15	1.15	1.15	Aminoazobenzene, 110 lb kegs	lb.	.....	1.15	1.15	1.15
				Ammonium					
.25	.13½	.10	.10½	Ammonia, anhyd, 100 lb cyl	lb.	.....	.13½	.13½	.13½
.04½	.03	.02½	.03	Water, 26°, 800 lb dr del	lb.	.....	.03	.03	.03
.....	.21	.21	.21	Bifluoride, 300 lb bbls	lb.	.21	.22	.22	.21
.08	.08½	.08½	.08½	Carbonate, tech, 500 lb cs	lb.	.08½	.09	.09	.08½
6.25	5.05	4.85	5.00	Chloride, White, 100 lb bbls wks	100 lb	4.70	5.15	5.15	4.70
.05½	.07	.05½	.06	Gray, 250 lb bbls wks	lb	5.40	5.75	5.75	5.40
.10	.11	.11	.11	Lump, 500 lb cks spot	lb.	.11	.11½	.11½	.11
.....	.15	.15	.15	Lactate, 500 lb bbls	lb.	.15	.16	.16	.15
.15	.06	.06	.06	Nitrate, tech, casks	lb.	.06	.10	.10	.06
.....	.27½	.27½	.27½	Persulfate, 112 lb kegs	lb.	.35	.38	.38	.27½
.....	.18	.18	.18	Phosphate, tech, powd, 325 lb bbls	lb.	.....	.18	.18	.18
2.60	2.30	2.55	2.41	Sulfate, bulk c-l	100 lb.	2.65	2.70	2.70	2.40
2.60	2.55	2.35	2.42	Southern points	100 lb.	2.75	2.80	2.75	2.55
.....	59.70	56.85	57.56	Nitrate, 26% nitrogen 31.6% ammonia imported bags	ton	.....	60.85	60.85	60.85
.....	.55	.55	.55	Sulfocyanide, kegs	lb.	.55	.60	.60	.55
1.55	2.25	1.90	2.10½	Amyl Acetate, (from pentane) drs	gal.	1.90	2.25	2.25	1.90
				Alcohol, see Fusel Oil					
.10½	.15½	.15	.15	Aniline Oil, 960 lb drs	lb.	.15½	.16½	.16½	.15½
.32	.41	.41	.41	Annatto, fine	lb.	.41	.48	.48	.41
.....	.90	.90	.90	Anthraquinone, sublimed, 125 lb bbls	lb.	.90	1.00	1.00	.90
.....	.11½	.14	.12	Antimony, metal slabs, ton lots	lb.	.....	.10½	.11½	.09½
.03½	.15½	.14	.15	Needle, powd, 100 lb cs	lb.	.....	.12	.12	.12
1918	.17	.17	.17	Chloride, soln (butter of) cbys	lb.	.17	.18	.18	.17
.06	.16½	.16½	.16½	Oxide, 500 lb bbls	lb.	.....	.12	.12	.12
.11½	.28	.25½	.26½	Salt, 66%, tins	lb.				
.18	.20	.16	.17½	Sulfuret, golden, bbls	lb.	.16	.20	.20	.16
.15	.42	.37½	.38	Vermilion, bbls	lb.	.38	.42	.42	.38
.14	.18	.18	.18	Archil, conc, 600 lb bbls	lb.	.17	.19	.19	.17
.08	.12	.12	.12	Double, 600 lb bbls	lb.	12	.14	.14	.12
.....	.16	.14	.15	Triple, 600 lb bbls	lb.	.15	.16	.16	.15
.....	.15	.12½	.13½	Argols, 80%, casks	lb.	.....	.08	.08	.08
.....	.08	.03	.06½	Coude, 30% casks	lb.	.15	.16	.16	.15
.05½	.10½	.10½	.10½	Arsenic, Red, 224 lb kegs, cs	lb.	.10½	.11	.11	.10½
.03	.04	.03½	.04	White, 112 lb kegs	lb.	.03½	.04	.04	.03½
.....	14.75	14.75	14.75	Asbestine, c-l wks	ton	.....	14.75	14.75	14.75
.....	47.50	47.50	47.50	Barium, Carbonate, 200 lb bags wks	ton	47.00	50.00	50.00	47.00
.13	.12	.12	.12	Chlorate, 112 lb kegs NY	lb.	.12	.12½	.12½	.12
30.00	65.00	57.50	60.70	Chloride, 800 lb bbl wks	ton	55.00	60.00	60.00	55.00
1916	.13	.13	.13	Dioxide, 88%, 690 lb drs	lb.	.13	.13½	.13½	.13
.....	.04½	.04½	.04½	Hydrate, 500 lb bbls	lb.	.04	.04½	.04½	.04½
.05½	.07½	.07½	.07½	Nitrate, 700 lb casks	lb.	.07½	.08	.08	.07½
17.00	23.00	23.00	23.00	Barytes, Floated, 350 lb bbls wks	ton	23.00	24.00	24.00	23.00
.....	.....	.....	.....	Bauxite, bulk, mines	ton	5.00	8.00	8.00	5.00
.39	.40	.37	.39	Beeswax, Yellow, crude bags	lb.	.37	.38	.38	.37
.40	.46	.38	.43	Refined, cases	lb.	.42	.43	.43	.42

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SODIUM SULPHIDE
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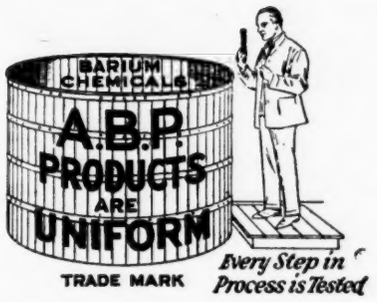

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Alton, Illinois

market is very strong. Producers are sold out and the only supplies available are in the nature of odd lots. In accordance with these conditions, prices have risen considerably during the month, Northern deliveries now being quoted at $2.65 @ $2.70 per hundred pounds, an advance of 20c per hundred pounds, while delivery in the South is quoted at $2.75 @ $2.80 per hundred pounds, marking a similar increase. It is expected that this will lead to a shifting in demand from this commodity to sodium nitrate, which is comparatively low in price.

Antimony — The market is weak both here and in China. Metal is now at 10½c lb. with little interest being shown in either spot or futures. Both needle and oxide are being quoted as low as 12c lb.

Archil — A steady tone characterizes this market, with the concentrated extract quoted at 17c @ 19c lb., double at 12c @ 14c lb., and triple at 15c @ 16c lb.

Arsenic — With the market fairly well in the hands of domestic manufacturers it is quoted at 4c lb. on a routine interest. However, reports of shading 10c per 100 lbs. to $3.90 are heard. No increase in business as a result of the approach of the Spring season has been reported yet, though it is a bit early for this demand.

Barium Chloride — There has not been any basic change in the position of the market during the month past. Domestic manufacturers continue to meet imported competition which in some instance is as low as $55.00 a ton in a large way. Sales of smaller lots have been made at figures considerably higher than this level. Consuming interest at the moment is none too good.

Bleaching Powder — Has not been much in the limelight since last reported. The market is steady at the levels quoted but rather routine at this writing.

Blood — Stocks are very limited with the New York market reported sold out. Business is very quiet with South American for March shipment offered at $4.70 @ $4.90 unit, but because of late position not evoking much inquiry.

Blues — Makers show no tendency to reduce prices which have been maintained at 31c @ 35c lb., with many refusing to sell on spot under 32c lb.

Borax — Based on highly competitive conditions, the market is weak and quoted at 3½c @ 4c lb. as to seller and quantity It is reported that this inside price can be shaded on a firm order of good volume. Consumers are taking stocks at a normal gait.

1914	1927				Current	1928	
July	High	Low	Aver.		Market	High	Low
.47½	.58	.56	.57½	White, cases.....lb.	.56	.58	.58	.56
.....	.65	.65	.65	Benzaldehyde, technical, 945 lb drums wks.....lb.	.65	.70	.70	.65
.....	.23	.21	.22	Benzene, 90%, Commercial, 8000 gal tanks wks.....gal.	.21	.23	.23	.21
.....	.23	.21	.22½	CP, tanks works.....gal.	.21	.23	.23	.21
.....	.70	.70	.70	Benzidine Base, dry, 250 lb bbls.....lb.	.70	.74	.74	.70
.....	1.00	1.00	1.00	Benzoyl, Chloride, 500 lb drs..lb.	.....	1.00	1.00	1.00
.....	.....	.....	.....	Benzyl, Chloride, tech drs....lb.	.....	.25	.25	.25
.....	.24	.24	.24	Beta-Naphthol, 250 lb bbl wk.lb	.24	.26	.26	.24
.....	1.35	1.35	1.35	Naphthylamine, sublimed, 200 lb bbls.....lb.	.....	1.35	1.35	1.35
.....	.63	.63	.63	Tech, 200 lb bbls.....lb.	.63	.65	.65	.63
75.00	80.00	80.00	80.00	Blanc Fixe, 400 lb bbls wks...ton	80.00	90.00	90.00	80.00
1.20	2.25	2.00	2.23	Bleaching Powder, 300 lb drs c-1 wks contract....100 lb.	.....	2.25	2.25	2.25
.....	2.25	2.00	2.02	700 lb drs c-1 wks contract .....100 lb.	.....	2.00	2.00	2.00
3.00	3.75	4.75	4.47½	Blood, Dried, FOB, NY..Unit	.....	5.10	5.25	5.10
.....	.....	.....	.....	Chicago.....Unit	.....	5.00	5.00	5.00
.....	.....	.....	.....	S. American shipt.....Unit	.....	4.70	5.00	4.70
.27	.30	.28	.29	Blues, Bronze Chinese Milori Prussian Soluble.....lb.	.31	.35	.35	.31
28.50	38.00	29.00	29.04	Bone, raw, Chicago.....ton	29.00	30.00	30.00	29.00
.....	.06	.06	.06	Bone, Ash, 100 lb kegs.....lb.	.06	.07	.07	.06
.02½	.08½	.08½	.06	Black, 200 lb bbls.....lb.	.....	.08½	.08½	.08½
20.00	30.00	28.00	29.46	Meal, 3% & 50%, Imp....ton	32.00	37.00	37.00	32.00
.04	.04½	.04½	.04½	Borax, crys, 500 lb bbls.....lb.	.03¾	.04¼	.05	.03¾
.07	.11	.11	.11	Bordeaux, Mixture, 16% pwd.lb.	.11	.12	.12	.11
.03½	.08	.08	.08	Paste, bbls.....lb.	.08	.10	.10	.08
55.00	28.00	26.00	27.30	Brazilwood, sticks, shpmt.....lb.	26.00	28.00	28.00	26.00
1918	.60	.60	.60	Bronze, Aluminum, powd blk.lb.	.60	1.20	1.20	.60
.....	.55	.55	.55	Gold, bulk.....lb.	.55	1.25	1.25	.55
.....	1.60	1.42	1.52	Butyl, Acetate, normal drs 1c-1 wks.....gal.	.....	1.60	1.60	1.60
.....	1.55	1.42	1.47½	Tank, drs wks.....gal.	.....	1.55	1.55	1.55
.....	1.00	1.00	1.00	Secondary, 50 gal drs.....gal.	1.00	1.05	1.05	1.00
.....	.70	.70	.70	Aldehyde, 50 gal drs wks...lb.	.....	.70	.70	.70
.....	.34	.34	.34	Propionate, drs.....lb.	.34	.36	.36	.34
.....	.60	.60	.60	Stearate, 50 gal drs.....lb.	.....	.60	.60	.60
.....	.57	.57	.57	Tartrate, drs.....lb.	.57	.60	.60	.57
1918	1.50	1.35	1.42	Cadmium, Sulfide, boxes.....lb.	1.35	2.00	2.00	1.35
				Calcium				
.....	3.50	3.50	3.50	Calcium, Acetate, 150 lb bags c-1.....100 lb.	.....	3.50	3.50	3.50
.....	.07½	.07½	.07½	Arsenate, 100 lb bbls c-1 wks.....lb.	.07	.08	.08	.07
.....	.05	.05	.05	Carbide, drs.....lb.	.05	.06	.06	.05
.....	1.00	1.00	1.00	Carbonate, tech, 100 lb bags c-1.....lb.	1.00	1.00	1.00	1.00
1918	27.00	27.00	27.00	Chloride, Flake, 375 lb drs c-1 wks.....ton	.....	25.00	27.00	25.00
12.00	21.00	21.00	21.00	Solid, 650 lb drs c-1 fob wks .....ton	20.00	22.00	23.00	20.00
.....	52.00	52.00	52.00	Nitrate, 220 lb bbls c-1 NY.ton	.....	52.00	52.00	52.00
.....	.09	.09	.09	Phosphate, tech, 450 lb bbls.lb.	.07	.08	.08	.07
.42½	.72	.62	.68	Camphor, American, refined 250 lb bbls.....lb.	.....	.62	.62	.62
.44½	.69	.60	.66	Japanese, ref, slabs, 100 lb cases.....lb.	.60	.61	.61	.60
.....	.....	.....	.....	Camwood, Bark, ground bbls.lb.	.....	.18	.18	.18
.22	.33	.33	.30½	Candelilla Wax, bags.....lb.	.....	.25	.28	.25
.....	.08	.08	.08	Carbon, Decolorizing, 40 lb bags c-1.....lb.	.08	.15	.15	.08
.....	.12	.12	.12	Black, 100-300 lb cases 1c-1 NY.....lb.	.....	.12	.12	.12
.06½	.05½	.05½	.05½	Bisulfide, 500 lb drs 1c-1 NY.....lb.	.05½	.06	.06	.05½
.....	.06	.06	.06	Dioxide, Liq, 20-25 lb cyl...lb.	.....	.06	.06	.06
.07½	.07	.07	.07	Tetrachloride, 1400 lb drs delivered.....lb.	.07	.07½	.07½	.07
.50	.50	.50	.50	Carnauba Wax, Flor, bags....lb.	.....	Nom.	.50	.50
.....	.90	.54	.60½	No. 1 Yellow, bags.....lb.	.54	.55	.60	.54
.32	.37	.24	.31	No. 2 N Country, bags.....lb.	.34	.35	.38	.34
.42½	.68	.48	.56	No. 2 Regular, bags.....lb.	.51	.52	.56	.51
.....	.18½	.15½	.17	Casein, Standard, ground.....lb.	.16½	.17	.18½	.16½
.....	.34	.26	.32¾	Celluloid, Scraps, Ivory cs....lb.	.26	.30	.30	.26
.....	.18	.18	.18	Shell, cases.....lb.	.18	.20	.20	.18
.....	.34	.26	.32¾	Transparent, cases.....lb.	.30	.32	.32	.30
.....	1.40	1.40	1.40	Cellulose, Acetate, 50 lb kegs..lb.	.....	1.40	1.40	1.40
.....	.03	.03	.03	Chalk, dropped, 175 lb bbls...lb.	.03	.03¾	.03¾	.03
.03	.02½	.02½	.02½	Precip, heavy, 560 lb cks...lb.	.....	.04½	.04½	.04½
.04	.04½	.04½	.04½	Light, 250 lb casks.....lb.	.02½	.03½	.03½	.02½
.....	.18	.18	.18	Charcoal, Hardwood, lump, bulk wks.....lb.	.18	.19	.19	.18
1918	.06	.06	.06	Willow, powd, 100 lb bbl wks.....lb.	.06	.06½	.06½	.06
.....	.04	.04	.04	Wood, powd, 100 lb bbls....lb.	.04	.05	.05	.04
.....	.03	.02½	.03	Chestnut, clarified bbls wks,..lb.	.02½	.03	.03	.02½
.04	.02	.01½	.02	25% tks wks.....lb.	.....	.02	.02	.02
.....	.05½	.05½	.05½	Powd, 60%, 100 lb bgs wks.lb.	.....	.04 4/5	04 4/5	.04 4/5
.....	.06½	.06½	.06½	Powd, decolorized bgs wks..lb.	.05½	.06	.06	.05½
8.00	8.00	8.00	8.00	China Clay, lump, blk mines.ton	8.00	9.00	9.00	8.00
.....	.01¾	.01¾	.01¾	Powdered, bbls.....lb.	.01¾	.02	.02	.01¾
.....	10.00	10.00	10.00	Pulverized, bbls wks.....ton	10.00	12.00	12.00	10.00
14.00	15.00	15.00	15.00	Imported, lump, bulk. ton	15.00	25.00	25.00	15.00
.....	.03	.03	.03	Powdered, bbls.....lb	.03	.03½	.03½	.03
1918	.08	.08	.08	Chlorine, cyls 1c-1 wks contract .....lb.	.08	.09	.09	.08
1917	.05½	.04	.04	Liq tank or multi-car lot cyls wks contract.....lb.	.....	.03½	.03½	.03½
1918	.07	.07	.07	Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.....	.07	.07	.07
.19	.20	.20	.20	Chloroform, tech, 1000 lb drs..lb.	.20	.22	.22	.20

ISCO CHEMICALS ESTABLISHED 1816

News Notes

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46 CLIFF STREET, NEW YORK

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1816 MARCH, 1928 1928

CHEMICAL PRICES FIRMER

We are well pleased with the results of the first two month's business and find that it exceeded the same period of 1927 and March seems to be holding up nicely. In general, business seems to have a firmer undertone and the demand for most industrial chemicals and allied products seems to be keeping up. February sales were fully up to expectations and we see nothing which would tend to interrupt the present flow of business for the month of March.

There is a particularly good demand for some products which has brought about a temporary scarcity, the principal ones of which are **Carbonates of Potash** and **Acetate of Soda.**

Acetic Acid is in good demand with prices fairly firm in spite of keen competition. Supplies are plentiful.

Citric and Tartaric Acids with the advent of Spring will without doubt experience an increased interest and demand. Prices are firm with an upward tendency.

Barium Chloride is fairly plentiful with prices somewhat easier.

Bleaching Powder is an item in which we specialize and we are in position to furnish this at all times for quick shipment in various size packages from our Niagara Falls Works.

Borax and Boric Acid — We solicit your inquiries and are in excellent position to supply these products from our various stock points.

Epsom Salts are firmer in price owing to advances which have taken place abroad.

NINETY YEARS AGO

In 1838—George Innis, son of the principal partner of Gifford, Sherman and Innis (the original name of our firm), which had been founded 22 years previously, was anticipating his college career. He had become interested in the prospects of following a chemical career with the firm his father had pioneered in 1816. Twenty-two years of operation had proven the need for quickly available chemicals and dyestuffs for the use of the rapidly growing New England Textile Industry. Our Company was thus closely identified with the early growth of American industry.

In April 1838 President Martin Van Buren transmitted into the Senate for ratification a treaty marking the boundary between the United States and the then Republic of Texas.

Negotiations were carried on with Canada to determine the Northern boundary of Maine and other Canadian boundaries.

The States of Georgia, North Carolina, Tennessee and Alabama were interested in a modification of the Cherokee Indian treaty of 1835.

France maintained a blockade of the principal Eastern ports of Mexico, which embarrassed our trade with our Southern neighbor.

EDITORIALS

Thank you, Mr. Haynes!

First, let us congratulate you on your "Chemical Markets"—we like it's new dress, but in our humble opinion—the old haberdashers' saying "Clothes make the man" doesn't hold water. It takes a look at the *inside* to get the real meat—then its worth digesting. Good stuff! Then thank you—your editorial "We", in welcoming us into print was encouraging. Remember, every knock is a boost—especially if you're trying to sell an anti-knock mixture.

SPIRIT OF SERVICE

An open letter to the consumers of Isco Chemical Company products:

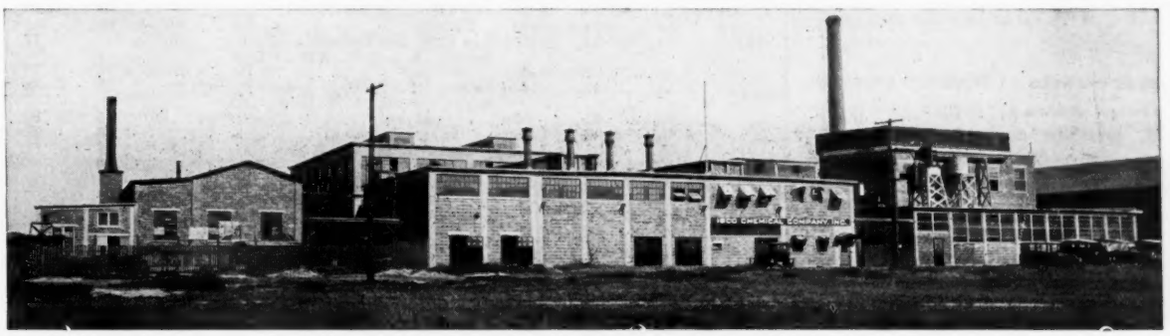
Gentlemen:

We have always prided ourselves on the quality of our products and the service which we render to our customers. We feel, however, that we have not yet reached the highest degree of perfection in the latter case.

With that thought in mind, we have established laboratories to help our customers wherever they wish to co-operate with us to the end of producing a product which has qualities, which tie in specifically with some need they may individually have.

We hope that this idea appeals to you to such a degree that you will be willing to receive our engineers at your plant to go over this question with you.

E. T. LADD,
Superintendent Isco Chemical Co.



ISCO CHEMICAL COMPANY PLANT
Niagara Falls, New York, Subsidiary of Innis, Speiden & Co.
The home of Isco Caustic Soda, Caustic Potash, Chloride of Lime and other Chlorine Products

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - Feb. 1928 68.4c

Calcium Acetate — At the quoted price of $3.50 100 lbs. the market is steady at this writing. Interest on the part of the consumers is only fairly good now.

Calcium Arsenate — Activity has been largely confined to withdrawals against contracts. Most of the buying has already been done, as activity started unusually early this year. Prices have been maintained in a strong market and little change is expected. Quotations are at 7c lb.

Calcium Chloride — Following the entering of a new producer in the market since the first of the year and a subsequent reduction of both flake and solid $1.00 a ton to $25.00 and $20.00 ton respectively there has not been any particular feature. Makers are satisfied with the volume of business being placed and are now busy working on the advance orders for the summer season. With favorable weather conditions, sales for 1928 are expected to be well in excess of last year's.

Candelilla Wax — Lower in the face of slack demand, now being quoted at 25c lb.

Carnauba Wax — Competition in the local market during the past month in the face of dull demand lead to further price reductions in all grades. No. 1, yellow is now quoted at 54c @ 55c lb., No. 2, North Country at 34c @ 35c lb., and No. 2 regular at 51c @ 52c lb.

Casein — Business has been rather routine, and prices have eased off a trifle in sympathy with the Argentine market. Standard ground is now quoted at 16½c @ 17c lb., a reduction of ½c lb. since last reported.

Chlorine — Most of the activity in this item is centered in making deliveries on contract orders. Spot business is neglected and consumers are not showing any particular interest in the market. Quotations are at 5c @ 9¼c lb. as to seller and quantity.

Copper Sulfate — With the approach of the major season for copper sulfate the market presents a very firm aspect. Though the insecticide manufacturers are not buying up to last year's quota, there is a good demand from agricultural quarters and several bulk orders were taken last week at $5.10 per 100 pounds for prompt shipment. The export inquiry has tapered off considerably, but a large business was done in this direction over the turn of the year and this has served to take stocks off this market. Some insecticide houses are believed to have stocks carried over from last year in the flood

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
....	1.00	1.00	1.00	Chloropicrin, comml, cyls....lb.	1.00	1.35	1.35	1.00
.17	.27	.26	.26¾	Chrome, Green, CP.....lb.	.26	.29	.29	.26
.03½	.06½	.06½	.06½	Commercial.....lb.	.06½	.11	.11	.06½
.11	.17½	.16½	.16¾	Yellow.....lb.	.16½	.17	.17	.16½
....	.05	.04½	.04¾	Chromium, Acetate, 8% Chrome bbls.....lb.	.04¾	.05¾	.05¾	.04¾
1918	.05½	.05½	.05½	20 soln, 400 lb bbls.....lb.	.....	.05½	.05½	.05½
.....	.27	.27	.27	Fluoride, powd, 400 lb bbl..lb.	.27	.28	.28	.27
.....	.34½	.34½	.34½	Oxide, green, bbls.....lb	.34½	.35½	.35½	.34½
....	9.50	9.00	9.08	Coal tar, bbls.....bbl	9.00	9.50	9.50	9.00
1.00	2.10	2.10	2.10	Cobalt Oxide, black, bags....lb.	2.10	2.22	2.22	2.10
.48	.92	.77	.85¾	Cochineal, gray or black bag..lb.	.84	.87	.87	.84
.42	.92	.77	.87½	Teneriffe silver, bags.....lb.	.....	.86	.86	.86
13.75	13.57½	12.90	12.97	Copper, metal, electrol...100 lb.	12.90	13.00	13.00	12.90
.13½	.16½	.16½	.16½	Carbonate, 400 lb bbls.....lb.	.16½	.17½	.17½	.16½
.....	.28	.28	.28	Chloride, 250 lb bbls.....lb.	.....	.28	.28	.28
.....	.48	.48	.48	Cyanide, 100 lb drs.....lb.	.48	.50	.50	.48
.....	.16½	.16½	.16½	Oxide, red, 100 lb bbls.....lb.	.16½	.17	.17	.16½
.28	.18	.17	.18	Sub-acetate verdigris, 400 lb bbls.....lb.	.18	.19	.19	.18
4.00	5.00	4.75	4.91¾	Sulfate, bbls c-l wks...100 lb.	5.05	5.15	5.15	5.05
13.00	17.00	13.00	13.33½	Copperas, crys & sugar bulk c-l wks.....ton	13.00	14.00	14.00	13.00
.....	1.25	1.25	1.25	Sugar, 100 lb bbls.....100 lb.	1.25	1.35	1.35	1.25
.80	.40	.40	.40	Cotton, Soluble, wet, 100 lb bbls.....lb.	.40	.42	.42	.40
.....	42.00	20.00	33.75	Cottonseed, S.E. bulk c-l...ton	.....	.....	.....	.....
.....	42.00	20.00	29.85	Meal S.E. bulk.....ton	.....	.....	.....	.....
26.50	35.00	21.50	30.38	7% Amm., bags mills...ton	36.00	37.00	37.00	36.00
.23¾	.27	.22	.24	Cream Tartar, USP, 300 lb. bbls.....lb.	.26	.27½	.27½	.26
.53	.40	.40	.40	Creosote, USP, 42 lb cbys.....lb.	.40	.42	.42	.40
1918	.20	.20	.20	Oil, Natural, 50 gal drs....gal.	.17	.19	.19	.17
1918	.25	.25	.25	10-15% tar acid.....gal.	.21	.23	.23	.21
				25-30% tar acid.....gal.	.25	.28	.28	.25
1918	.17½	.17½	.17½	Cresol, USP, drums.....lb.	.17½	.20	.20	.17½
.07¾	.17	.16	.16½	Cudbear, English.....lb.	.16	.17	.17	.16
.05	.18½	.15	.18	Cutch, Rangoon, 100 lb bales.lb.	.....	.18½	.18½	.18½
.....	.05	.05½	.05½	Borneo, Solid, 100 lb bale...lb.	.06	.07	.07	.06
.....	1.82½	1.67½	1.78¾	Cyanamide, bulk c-l wks Amm. .....lb.	.....	1.67½	1.67½	1.67½
.....	3.92	3.77	3.84½	Dextrin, corn, canary....100 lb.	4.27	4.47	4.47	3.77
3.00	3.87	3.72	3.78½	White, 140 lb bgs c-l...100 lb.	4.22	4.42	4.42	3.72
.05½	.08½	.08½	.08½	Potato, yellow, 220 lb bgs...lb.	.08	.09	.09	.08
.05½	.08½	.08½	.08½	White, 220 lb bags 1c-l....lb.	.08	.09	.09	.08
.....	.08¼	.08	.08	Tapioca, 200 lb bags 1c-l...lb.	.08	.08½	.08½	.08
.....	3.80	3.80	3.80	Diaminophenol, 100 lb kegs...lb	.....			
.....	2.95	2.85	2.93½	Diamylphthalate, drs wks...gal.	.....	3.80	3.80	3.80
.....	3.25	3.25	3.25	Dianisidine, 100 lb kegs.....lb.	2.85	2.90	2.90	2.85
.....	.31½	.29½	.30½	Dibutylphthalate, wks.....lb.	.....	2.80	2.80	2.80
.....	.55	.55	.55	Dibutyltartrate, 50 gal drs....lb.	.29½	.31½	.31½	.29½
.....	.23	.23	.23	Dichloromethane, drs wks....lb.	.55	.65	.65	.55
.....	2.15	2.15	2.15	Diethylamine, 400 lb drs.....lb.	.23	.25	.25	.23
.....	1.85	1.85	1.85	Diethyl carbonate, drs.....gal.	.....	2.15	2.15	2.15
1918	.55	.55	.55	Diethylaniline, 850 lb drs.....lb.	1.85	2.00	2.00	1.85
.....	.20	.20	.20	Diethyleneglycol, drs.....lb.	.55	.60	.60	.55
.....	.....	.....	.....	Mono ethyl ether, drs....lb	.10	.12	.12	.10
.....	.....	.....	.....	Mono butyl ether, drs....lb.	.25	.35	.35	.25
.....	.64	.64	.64	Diethylorthotoluidin, drs.....lb.	.64	.67	.67	.64
.....	.25	.25	.25	Diethyl phthalate, 1000 lb drums.....lb.	.24	.26	.26	.24
.....	.30	.20	.25	Diethylsulfate, technical, 50 gal drums.....lb.	.30	.35	.35	.30
.....	2.60	2.60	2.60	Dimethylamine, 400 lb drs....lb.	.....	2.62	2.62	2.62
1918	.32	.30	.31½	Dimethylaniline, 340 lb drs...lb	.30	.32	.32	.30
....	.45	.45	.45	Dimethylsulfate, 100 lb drs...lb.	.45	.50	.50	.45
1918	.15½	.15	.15½	Dinitrobenzene, 400 lb bbls...lb.	.15½	.16½	.16½	.15½
.....	.18	.18	.18	Dinitrochlorine, 300 lb bbl....lb.	.18	.19	.19	.18
1918	.15	.15	.15	Dinitrochlorobenzene, 400 lb. bbls.....lb.	.15	.16	.16	.15
1917	.32	.32	.32	Dinitronaphthalene, 350 lb bbls .....lb.	.32	.34	.34	.32
1918	.31	.31	.31	Dinitrophenol, 350 lb bbls....lb.	.31	.32	.32	.31
1918	.18	.15	.17½	Dinitrotoluene, 300 lb bbls....lb.	.18	.19	.19	.18
.....	1.05	.85	.88	Diorthotolyguanidine, 275 lb bbls wks.....lb.	.80	.85	.90	.80
1918	.48	.45	.45½	Diphenylamine.....lb.	.45	.47	.47	.45
.....	.....	.....	.....	Diphenylguanidine, 100 lb bbl.lb.	.64	.68	.72	.64
....	.26	.26	.26	Dip Oil, 25%, drums.....lb.	.2¢	.30	.30	.26
45.00	49.00	41.00	45.25	Divi Divi pods, bgs shipmts....lb.	.....	60.00	60.00	60.00
.02½	.04	.04	.04	Extract.....lb.	.05	.05½	.05½	.05
1918	.84	.72	.67½	Egg Yolk, 200 lb cases.....lb.	.76	.77	77	.76
1.00	2.00	1.75	1.87½	Epsom Salt, tech, 300 lb bbls c-l NY.....100 lb.	1.70	1.75	1.75	1.70
.22	.45	.37	.43	Esther, USP, 1880, 50 lb drs..lb.	.37	.38	.38	.37
.....	.90	.90	.90	Ethyl Acetate, 85% Ester, 110 gal drs.....gal.	.....	.75	.80	.75
.....	1.10	1.03	1.08	99%, gal drums.....gal.	.....	1.10	1.10	1.10
.....	1.05	1.05	1.05	Benzylaniline, 300 lb drs...lb.	1.05	1.11	1.11	1.05
.....	.50	.50	.50	Bromide, tech, drums.....lb.	.....	.70	.70	.70
.....	.22	.22	.22	Chloride, 200 lb. drums....lb.	.....	.22	.22	.22
....	3.50	3.50	3.50	Lactate, drums works.....gal.	.....	3.50	3.50	3.50
1918	.30	.30	.30	Methyl Ketone, 50 gal drs..lb.	.....	.30	.30	.30
.....	.45	.45	.45	Oxalate, drums works.....lb.	.45	.55	.55	.45
.....	.70	.70	.70	Ethylene Bromide, 600 lb dr..lb.	.....	.7C	.70	.70
.....	.75	.75	.75	Chlorhydrin, anhydrous, 50 gal drums.....lb.	.75	.85	.85	.75
.....	.15	.11	.11¼	Dichloride, 50 gal drums...lb.	.07	.10	.11	.07
.....	.30	.30	.30	Glycol, 50 gal drs wks.....lb.	.25	.30	.40	.25
.....	.30	.30	.30	Ethyl Ether, 50 gal drs 1c-l wks.....gal.	.....	1.79	1.79	1.79
1918	.62	.62	.62	Ethylidenaniline.....lb.	.62	.65	.65	.62
8.00	20.00	20.00	20.00	Feldspar, bulk.....ton	20.00	25.00	25.00	20.00
.....	15.00	15.00	15.00	Powdered, bulk works.....ton	15.00	21.00	21.00	15.00
.....	.07½	.07½	.07½	Ferric Chloride, tech, crystals 475 lb bbls.....lb.	.07½	.09	.09	.07½
.....	.....	.....	.....	Ferrous Chloride, tech, crystals 475 lb bbls.....lb.	.05	.06	.06	.05

DU PONT
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ORGANIC CHEMICALS
for
Industrial Purposes

DYESTUFF INTERMEDIATES—After more than ten years experience in the manufacture of Intermediates and Dyestuffs we have accumulated a fund of knowledge and technical skill that enables us to guarantee our products to conform with your most exacting quality standards. Our own large consumption requirements of these products is your assurance of uniformity of product and constant availability of stocks.

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1114 Union Trust Bldg.

New York, N. Y.
8 Thomas St.

San Francisco, Cal.
569 Mission St.

Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - Feb. 1928 68.4c

districts of the Mississippi which will prohibit their buying their usual volume this season, but the growing demand from other quarters is expected to more than offset this and a further advance in price by the time the season is at its height is not unlooked for. Less than carlots range to $5.75 100 lbs. as to quantity and position.

Copperas — The very brisk demand which was in evidence earlier in the year has eased off. The market is still quite firm in all directions and sellers are having no trouble in getting $13.00 per ton in bulk.

Cream of Tartar — The spot market presents a very firm appearance and the price has been advanced during the past week to 26½c @ 27c lb. At these levels sales have been made to consumers.

Dextrin — Prevailing high prices of corn resulted in a considerable price advance in canary and white, the former now being quoted at $4.27 @ $4.47 per hundred pounds and the latter at $4.22 @ $4.42 per hundred pounds. Demand apparently increased with the advanced prices and producers found themselves hard-pressed to fill orders. Prices on potato and tapioca remained steady.

Divi Divi — Stocks are still very scarce but business has been quiet due to somewhat lessened activity in tanning industry. Quotations are at $60 for the natural product, while the extract is quoted at 5c @ 5½c lb.

Epsom Salts — There is a fair consuming demand noted on this market and both imported and domestic factors seem satisfied with the volume of business being done. Technical salts of domestic origin are quoted at $1.70 @ $1.80 100 lbs. spot. Imported has been arriving from Germany in good sized quantities and sellers here are disposing of these stocks readily.

Ethyl Acetate — Since the reductions earlier in the year there has not been any change in the actual market quotation. Makers are experiencing some demand from consuming channels and the open quotations are placed at 75c @ 80c gal.

Formaldehyde — Business has been rather routine during the latter part of February and early in March. Consumers do not seem anxious to buy, but when orders are consummated, they are on the basis of 8½c lb. in carlots and 8¾c @ 9c lb. in less carlots.

Glycerin — The market for dynamite glycerin is marking time. Consumers are not anxious to buy, being of the opinion that the market has not touched bottom yet. On the other hands, producers are

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
2.80	5.60	4.15	4.69	Fish Scrap, dried, wks.....unit	.....	Nom.	Nom.	Nom.
				Acid, Bulk 7 & 3½% delivered				
2.50	3.50	4.24	3.56¼	Norfolk & Balt. basis...unit	.....	Nom.	Nom.	Nom.
.08	.14	12¼	.13¾	Flake, White, bbls.....lb.	.....	Nom.	Nom.	Nom.
.40	1.10	.90	1.01¼	Flavine, lemon, 55 lb cases...lb.	1.10	1.15	1.15	1.10
.40	1.10	.85	.89	Orange, 70 lb cases.....lb.	1.10	1.15	1.15	1.10
.....				Flavseed.....lb.				
.....	25.00	25.00	25.00	Fluorspar, 95%, 220 lb bags...lb.	.....	.....	.....	.....
.....	.....	.....	.....	Ex-dock.....ton	.....	.....	.....	.....
				Formaldehyde, aniline, 100 lb.	.....	25.00	25.00	25.00
.....	.39	.39	.39	drums.....lb.	.39	.42	.42	.39
.08¼	.11½	.08¾	.10	USP, 400 lb bbls 1c-1 wks...lb.	.08½	.09	.09	.08½
.....	.02½	.02¾	.02½	Fossil Flour.....lb.	.02½	.04	.04	.02½
.....	15.00	15.00	15.00	Fullers Earth, bulk, mines...ton	15.00	20.00	20.00	15.00
.....	25.00	25.00	25.00	Imp, powd c-1 bags.....ton	25.00	30.00	30.00	25.00
.....	.17½	.17½	.17½	Furfural, 500 lb drums.....lb.	.17½	.19½	.19½	.17½
1.10	1.69	1.35	1.59	Fusel Oil, 10% impurities....gal.	.....	1.35	1.35	1.35
.01½	.04	.04	.04	Fustic, chips.....lb.	.04	.05	.05	.04
.....	.20	.20	.20	Crystals, 100 lb boxes.....lb	.20	.22	.22	.20
.06	.09	.09	.09	Liquid, 50°, 600 lb bbls....lb.	.09	.10	.10	.09
.08	.20	.20	.20	Solid, 50 lb boxes.....lb.	.20	.23	.23	.20
12.00	30.00	30.00	30.00	Sticks.....ton	30.00	32.00	32.00	30.00
1918	.50	.50	.50	G Salt paste, 360 lb bbls.....lb.	.50	.52	.52	.50
.12	.20	.20	.20	Gall Extract.....lb.	.20	.21	.21	.20
.04½	.08	.06	.....	Gambier, common 200 lb cs...lb.	.08	.09	.09	.08
1917	.12	.12	.12	25% liquid, 450 lb bbls....lb.	.12	.14	.14	.12
.05½	.23	.11	.17	Singapore cubes, 150 lb bg..lb.	.11	.12	.12	.11
.....	.45	.30	.43¾	Gelatin, tech, 100 lb cases....lb.	.45	.50	.50	45
.....	3.14	3.14	3.14	Bags, c-1 NY.....100 lb.	3.14	3.24	3.24	3.14
				Glauber's Salt, tech, 250 lb bags				
.60	1.05	1.05	1.05	c-1 wks.....100 lb.	.75	1.05	1.05	.75
				Glucose (grape sugar) dry 70-				
.....	3.24	3.24	3.24	80° bags c-1 NY....100 lb.	3.24	3.34	3.34	3.24
				Tanner's Special, 100 lb bags				
.....	3.14	3.14	3.14	.....100 lb.	.....	3.14	3.14	3.14
.12	.20	.20	.20	Glue, medium white, bbls....lb.	.20	.24	.24	.20
.18	.22	.22	.22	Pure white, bbls.....lb.	.22	.26	.26	.22
.19½	.29	.22	.24	Glycerin, CP, 550 lb drs.....lb.	.17	.17½	.19	.17
.19½	.25	.17	.21½	Dynamite, 100 lb drs.....lb.	.11½	.11½	.15	.11¼
.....	.....	.....	.....	Saponification, tanks.....lb.	.08½	.09	.10¼	.08¾
.....	.....	.....	.....	Soap Lye, tanks.....lb.	.07½	.07½	.09¼	.07½
.....	15.00	15.00	15.00	Graphite, crude, 220 lb bgs..ton	15.00	35.00	35.00	15.00
.....	.05	.05	.05	Flake, 500 lb bbls.....lb.	.06	.09	.09	.06
				Gums				
				Gum Accroides, Red, coarse and				
.....	.03¾	.03¾	.03¾	fine 140-150 lb bags....lb.	.03¾	.04½	.04½	.03¾
.....	.06	.06	.06	Powd, 150 lb bags.....lb.	.06	.06½	.06½	.06
.....	.18	.18	.18	Yellow, 150-200 lb bags..lb.	.18	.20	.20	.18
				Animi (Zanzibar) bean & pea				
.25	.40	.35	.39	250 lb cases.....lb.	.35	.40	.40	.35
.....	.60	.50	.57½	Glassy, 250 lb cases.....lb.	.50	.55	.55	.50
				Asphaltum ,Barbadoes				
.05	.09	.09	.09	(Manjak) 200 lb bags..lb	.09	.12	.12	.09
.15	.15	.15	.15	Egyptian, 200 lb cases.....lb.	.15	.17	.17	.15
				Gilsonite Selects, 200 lb bags				
36.00	55.00	55.00	55.00	.....ton	58.00	65.00	65.00	55.00
				Damar Batavia standard 136,				
.17½	.26½	.26½	.25	lb cases.....lb.	.23	.23½	.23½	.23
.....	.10½	.07	.10	Batavia Dust, 160 lb bags..lb.	.10½	.11	.11	.10½
.....	.18½	.17½	.18½	E Seeds, 136 lb cases....lb.	.17	.17½	.17½	.17
				F Splinters, 136 lb cases and				
.....	.14	.09	.13	bags.....lb.	.14	.14½	.14½	.14
.....	.34	.33½	.34	Singapore, No. 1, 224 lb caseslb.	.30	.30½	.30½	.30
.14	.22½	.21	.22¼	No. 2, 224 lb cases.....lb.	.20	.21	.21	.20
.08	.14	.11	.12	No. 3, 180 lb bags.....lb.	.14	.15	.15	.14
				Benzoin Sumatra, technical, 120				
.34	.35	.30	.30	lb cases.....lb.	.33	.35	.35	.33
				Copal Congo, 112 lb bags, clean				
.....	.14	.12	.13	opaque.....lb.	.14	.15	.15	.14
.12	.08½	.08½	.08½	Dark, amber.....lb.	.08½	.09	.09	.08½
.18	.12½	.12½	.12½	Light, amber.....lb	.12½	.14	.14	.12½
.25	.35	.35	.35	Water white.....lb	.35	.36	.36	.35
				Mastic.....lb.	.58	.60	.60	.58
				Manila, 180-190 lb baskets				
.15	.16	.16	.16	Loba A.....lb.	.16	.16½	.16½	.16
.....	.15	.15	.15	Loba B.....lb.	.15	.15½	.15½	.15
.....	.14½	.13	.13¾	Loba C.....lb.	.13	.13½	.13½	.13
.....	.16	.16	.16	Pale bold, 224 lb cs.....lb.	.16	.18	.18	.16
.08½	.14	.12	.13	Pale nubs.....lb	.12	.12½	.12½	.12
.....	.07½	.07½	.07½	East Indies chips, 180lb bagslb.	.07½	.08	.08	.07½
.....	.....	.....	.....	Pale bold, 180 lb bags..lb.	.17	.17½	.17½	.17
.....	.17	.17	.17	Pale nubs.....lb.	.14	.14½	.14½	.14
.....	.....	.....	.....	Pontianak, 224 lb cases....lb.				
.13½	.29	.25	.26½	Pale bold gen No. 1.....lb.	.25	.25½	.25½	.25
.07	.19	.13	.15½	Pale gen chips spot.....lb.	.13	.14½	.14½	.13
.....	.14	.13	.13¾	Elemi, No. 1, 80-85 lb cs...lb.	.13½	.14	.14	.13
.....	.13	.12	.12¼	No. 2, 80-85 lb cases.....lb.	.13	.13½	.13½	.13
.....	.13	.11	.11	No. 3, 80-85 lb cases.....lb.	.12	.13	.13	.12
				Kauri, 224-226 lb cases No. 1				
.50	.67½	.57	.63½	.....lb.	.50	.57	.57	.50
.32	.44½	.38	.41	No. 2 fair pale.....lb.	.35	.38	.38	.35
				Brown Chips, 224-226 lb				
.07½	.14½	.10	.12	cases.....lb.	.10	.12	.12	.10
.....	.42	.38	.40	Bush Chips, 224-226 lb				
				cases.....lb.	.38	.40	.40	.38
				Pale Chips, 224-226 lb cases				
.....	.31½	.24½	.25	.....lb.	.24½	.26	.26	.24½
				Sandarac, prime quality, 200				
.19	.27	.25	.25	lb bags & 300 lb casks...lb.	.26	.27	.27	.26
1917	.12	.12	.12	Hematine crystals, 400 lb bbls.lb.	.17	.20	.20	.17
1917	.09	.09	.09	Paste, 500 bbls.....lb	.....	.11	.11	.11
.02½	.03½	.03½	.03½	Hemlock 25%, 600 lb bbls wks lb.	.03½	.03¾	.03¾	.03½
.....	16.00	16.00	16.00	Bark.....ton	.....	16.00	16.00	16.00
.....	.60	.45	.56	Hexalene, 50 gal drs wks.....lb.	.....	.60	.60	.60
.....	.80	.62	.72	Hexamethylenetetramine, drs.lb.	.62	.65	.65	.62
2.60	3.35	2.75	3.08	Hoof Meal, fob Chicago.....unit	.....	.....	.....	.....

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Phthalic Anhydride of the highest purity has been produced by us in commercial quantity for for over 9 years and this pure Phthalic Anhydride is well-known to the trade as SELDEN BRAND. Its form is the natural long needle crystal which dissolves and melts much more rapidly than in any other form.

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Prices Current and Comment

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trying to hold the market at levels of about 11½c lb. Sales have been made during the past ten days at 11¼c lb. and reports are heard of transactions at 11c lb., though these latter have not been confirmed. It is felt here that with stocks in their present position, another decline is quite possible. On the other hand with the approach of Spring, the dynamite manufacturers should show some interest which might have a reviving effect on the market. Saponification and lye are proportionally lower at 9⅛c lb. and 8⅛c lb. respectively. Refiners prices on chemical pure have not changed and remain at 17c lb.

Glauber Salts — Much the same conditions continue to exist in the New England market. With imported competition, the market has been forced down to 70c @ 80c 100 lbs. in bags in that territory, where a fair sale is reported. In this district, conditions are better and domestic manufacturers are getting considerably nearer the openly quoted price. Consumers are taking a fair supply of stocks offered.

Japan Wax — Dullness continues with prices lower at 18c lb.

Lead Acetate — Makers are holding the spot market firm in spite of an easiness in the raw material market. Quotations are at 12c @ 12½c lb. for brown broken; white broken and granular at 13½c @ 14c lb. and white crystals at 13c @ 13½c lb.

Mercury — The spot market continues to ease off gradually and the latest open quotations are at $121.00 per flask for prompt delivery. Dealers are experiencing a fairly good consuming demand and the stocks here are not heavy so that no sharp declines are looked for, though it is admitted that further gradual recessions in price are entirely possible. Activity on the London market has not been very pronounced of late and for this reason its effect on the American market cannot be gauged. Consumers, expecting the general easy condition to continue are buying only for immediate requirements in most cases.

Methanol — Stocks are in good supply in all directions and while sellers claim to be experiencing a fairly good sale at this time, the market lacks any signs of strength. There is some competition for business noticeable and the openly quoted prices are subject to shading for business. Current quotations are at: 46c gal. for 95% in drums; 48c gal. for 97% in drums; 48c gal. for pure in drums and 45c gal. for denatured in tanks.

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	3.90	3.00	3.57	South Amer. to arrive....unit	.....	.....	.....	.....
.....	.30	.22	.24	Hydrogen Peroxide, 100 vol, 140 lb cbys.....lb.	.24	.26	.26	.24
1917	.12	.12	.12	Hpyernic, 51°, 600 lb bbls....lb.	.12	.15	.15	.12
.58	1.28	1.20	1.27	Indigo Madras, bbls.....lb.	1.28	1.30	1.30	1.28
.....	.14	.14	.14	20% paste, drums.....lb.	.14	.15	.15	.14
.....	.07½	.07½	.07½	Solid, powder.....lb.	.07½	.08	.08	.07½
				Iron Chloride, see Ferric or Ferrous				
.04	.09	.09	.09	Iron Nitrate, kegs.....lb.	.09	.10	.10	.09
1.12½	2.50	2.50	2.50	Coml, bbls.....100 lb.	2.50	3.25	3.25	2.50
.....	.10	.10	.10	Oxide, English.....lb.	.10	.12	.12	.10
.....	.02½	.02½	.02½	Red, Spanish.....lb.	.02½	.03½	.03½	.02½
.....	.85	.85	.85	Isopropyl Acetate, 50 gal drs.gal.	.85	.90	.90	.85
.11½	.29	.17	.19	Japan Wax, 224 lb cases.....lb.	.....	.18	.19	.18
.....	60.00	60.00	60.00	Kieselguhr, 95 lb bgs NY....ton	60.00	70.00	70.00	60.00
.....	.03¾	.03¾	.03¾	Larch Extract, 25%, 600 lb bbls wks.....lb.	.03¾	.04	.04	.03¾
.....	.08	.08	.08	Powd, 100 lb bags wks.....lb.	.08	.09	.09	.08
.....	14.00	13.00	13.33	Lead Acetate, bbls wks...100 lb.				
9.12½	14.00	13.00	13.33	White crystals, 500 lb bbls wks.....100 lb.	13.00	13.50	13.50	13.00
.04¾	.15½	.13½	.13	Arsenate, bbls 1c-1 wks.....lb.	.13	.15	.15	.13
3.90	7.80	6.20	6.78	Metal, c-1 NY.....100 lb.	.....	6.25	6.25	6.25
.07¾	.14	.14	.14	Nitrate, 500 lb bbls wks....lb.	.....	.14	.14	.14
.17½	.17½	.17½	.17½	Oleate, bbls.....lb.	.17½	.18	.18	.17½
.....	.10½	.08½	.09	Oxide Litharge, 500 lb bbls..lb.	.....	.08½	.08½	.08½
.05½	.11½	.09¾	.10	Red, 500 lb bbls wks.....lb.	.....	.09¾	.09¾	09¾
.05½	.09½	.09	.09½	White, 500 lb bbls wks...lb.	.....	.09	.09	.09
.05	.09	.08½	.08¾	Sulfate, 500 lb bbls wk...lb.	.....	.08½	.08½	.08¾
.....	4.50	4.50	4.50	Lime, ground stone bags....ton	.....	4.50	4.50	4.50
.....	1.05	1 05	1.05	Live, 325 lb bbls wks..100 lb.	.....	1.05	1.05	1.05
				Lime Salts, see Calcium Salts				
1918	.15	.15	.15	Lime-Sulfur soln bbls.....gal.	.15	.17	.17	.15
.03¾	.06½	.06½	.06½	Lithopone, 400 lb bbls 1c-1 wks .....lb.	.....	.06½	.06½	.06½
.05	.08½	.08½	.08½	Logwood, 51°, 600 lb bbls.....lb.	.08½	.08½	.08½	.08½
.01½	.03	.03	.03	Chips, 150 lb bags.....lb.	.03	.03½	.03½	.03
.06	.12	.12	.12	Solid, 50 lb boxes.....lb.	.....	.12½	.12½	.12½
15.00	26.00	26.00	26.00	Sticks.....ton	26.00	27.00	27.00	26.00
.....	.07½	.07½	.07½	Lower grades.....lb.	.07½	.08	.08	.07½
.12	.30	.30	.30	Madder, Dutch.....lb.¾	.....	.30	.30	.30
30.00	48.00	48 00	48.00	Magnesite, calc, 500 lb bbl..ton	48.00	50.00	50.00	48.00
				Magnesium				
1918	.06½	.06	.06	Magnesium Carb, tech, 70 lb bags NY.....lb.	.06	.06½	.06½	.06
.....	37.00	37.00	37.00	Chloride flake, 375 lb drs c-1 wks.....ton	.....	37.00	37.00	37.00
.....	33.00	33.00	33.00	Imported shipment...ton	.....	33.00	33.00	33.00
.....	31.00	31.00	31.00	Fused, imp, 900 lb bbls NY ton	.....	31.00	31.00	31.00
.....	.10	.10	.10	Fluosilicate, crys, 400 lb bbls wks.....lb.	.10	.10½	.10½	.10
.....	.42	.42	.42	Oxide, USP, light, 100 lb bbls .....lb.	.....	.42	.42	.42
.....	.50	.50	50	Heavy, 250 lb bbls.....lb.	.....	.50	.50	.50
.....	.12½	.09¾	.11½	Silicofluoride, bbls.....lb.	.09¾	.10½	.10½	.09¾
.....	.23	.23	.23	Stearate, bbls.....lb.	.23	.25	.25	.23
.20	.24	.24	.24	Manganese Borate, 30%, 200 lb bbls.....lb.	.....	.24	.24	.24
.06	.08	.08	.08	Chloride, 600 lb casks.....lb.	.08	.08½	.08½	.08
.....	.05	.04¼	.04¼	Dioxide, tech (peroxide) drs.lb.				
.....	.03	.03	.03	Ore, powdered or granular 75-80%, bbls.....lb.	.48 .03	.50 .03½	.50 .03½	.48 .03
.....	.04	.04	.04	80-85%, bbls.....lb.	.04	.04½	.04½	.04
.....	.05	.05	.05	85-88%, bbls.....lb.	.05	.05½	.05½	.05
.....	.07	.07	.07	Sulfate, 550 lb drs NY.....lb.	.07	.07½	.07½	.07
.....	.03½	.03½	.03½	Mangrove 55%, 400 lb bbls...lb.	.03½	Nom.	Nom.	.03½
.....	39.00	34.00	37.54	Bark, African.....ton	45.00	45.00	45.00	40.00
8.00	10.00	10.00	10.00	Marble Flour, bulk.....ton	10.00	12.00	12.00	10.00
1916	129.00	99.00	119.09	Mercury metal.....75 lb flask	121.00	122.00	127.50	121.00
1918	.72	.72	.72	Meta-nitro-aniline.....lb.	.72	.74	.74	.72
1918	1.70	1.70	1.70	Meta-nitro-para-toluidine 200 lb bbls.....lb.	1.70	1.80	1.80	1.70
1918	.90	.90	.90	Meta-phenylene-diamine 300 lb bbls.....lb.	.90	.94	.94	.90
1918	.72	.72	.72	Meta-toluene-diamine, 300 lb bbls.....lb.	.72	.74	.74	.72
.4	.....	.....	.....	Methanol, (Wood Alcohol), drs				
.45	.80	.55	.69	95%.....gal.	.52	.57	.55	.52
.50	.87	.57	.74½	97%, drums 1c-1.....gal.	.54	.57	.57	.54
.....	.....	.....	.....	Pure, drums 1c-1.....gal.	.48	.50	.58	.48
.....	.....	.....	.....	Synthetic, drums 1c-1.....gal.	.48	.50	58	.48
.....	.80	.75	.78	Denat. grd. tanks.....gal.	.45	.47	.75	.45
.....	.95	.95	.95	Methyl Acetate, drums.....gal.	.....	.95	.95	.95
.....	.88	.75	.66	Acetone, 100 gal drums...gal.	.75	.80	.80	.75
.....	1.00	.85	.92¾	Anthraquinone, kegs.....lb.	.85	.95	.95	.85
.....	.55	.55	.55	Chloride, 90 lb cyl.....gal.	.55	.60	.60	.55
.....	.03½	.03½	.03½	Mica, dry grd. bags wks.....lb.	65.00	80.00	80.00	65.00
.....	.05½	.05½	.05½	Wet, ground, bags wks.....lb.	110.00	115.00	115.00	110.00
.....	3.00	3.00	3.00	Michler's Ketone, kegs.....lb.	.10	.10½	.10½	.10
.....	.70	.70	.70	Monochlorobenzene, drums see, Chlorobenzene, mono.....lb. Monoethylorthotoluidin, drs..lb.	.70	.75	.75	.70
1918	1.05	1.05	1.05	Monomethylaniline, 900 lb dr .....lb.	.....	1.05	1.05	1.05
.....	3.95	3.95	3.95	Monomethylparaminosulfate 100 lb drums.....lb.	3.95	4.20	4.20	3.95
.06½	.06½	.06½	.06½	Montan Wax, crude, bags....lb.	.06½	.07	.07	.06½
.....	.04	.04	.04	Myrobalans 25%, liq bbls.....lb.	.04¼	.04½	.04½	.04½
.....	.08	.08	.08	50% Solid, 50 lb boxes.....lb.	.08	.08½	.08½	.08
27.00	43.50	41.00	42.00	J 1 bags.....ton	48.00	50.00	50.00	48.00
27.00	37.00	23.50	35.24	J 2 bags.....ton	.....	38.00	40.00	38.00
27.00	37.00	30.00	36.62	R 2 bags.....ton	.....	37.00	40.00	37.00
.10	.21	.18	.19¾	Naphtha, v. m. & p. (deodorized) bbls.....gal.	.....	.18	.18	.18

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - Feb. 1928 68.4c

Methyl Acetone — The weakness noticeable since the first of the year has continued and is still apparent at this time. Without any great interest on buyers part the market has eased off to open quotations of 75c @ 78c gal. according to quantity and seller. Even these prices are regarded as none too steady.

Myrobolans — Prices on J1 have remained unchanged but slack demand has lead to reduction in J2 and R2, the former now being quoted at $38.00 ton and the latter at $37.00 ton. Extracts continue unchanged.

Naphthalene — A steady tone to the market is noticeable and though the market has not changed since last reported, it is holding quite steady at 5½c @ 6c lb. for balls and 5c @ 5½c lb. for flakes.

Paris Green — In the face of rather restricted business, prices have eased off a trifle, quotations in bulk now ranging from 17c @ 21c lb.

Quebracho — Continues to enjoy a substantial demand with the result that 63 per cent. extract is somewhat higher, now being quoted at 5¼c @ 5¾c lb. and clarified at 5½c lb.

Rosin — The market has gradually become firmer with almost every week showing price advances so that most grades are now substantially higher than when last quoted here. Indications are that the market has not yet reached its peak, and when it does, some of this improvement is bound to be retained. Receipts have been small and if business continues good these lots could be absorbed without weakening the market. Demand also is good so that buyers are competing for lots which also has a strengthening effect on the market. Soon after the first of the month the spot market was quoted as follows: B $9.05; D $9.55; E $9.75; F. $9.95; G $10.00; H and I $10.05; K and M $10.20; N $10.75; WG $11.25; WW $12.00.

Shellac — The decline in price has continued again this month as further reports on the new crop emphasize its favorable nature. Although no estimates of its size have as yet been given out, it is considered to be very large, and stocks are expected to be available by April. Bone dry is now being quoted at 49c @ 50c lb.; garnet at 46c @ 47c lb.; superfine at 47c @ 48c lb.; and T. N. at 42c @ 43c lb.

Soda Ash — With contract shipments moving up to schedule there has been nothing of particular note in this market during the past month. There is a bit of spot business reported, but sellers are

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Naphthalene balls, 250 lb bbls			
.02¾	.06	.05½	.05¾	wks.....lb.	.....	.05½	.06	.05½
.....	.04½	.04½	.04½	Crushed, chipped bgs wks..lb.	.....	.04½	.04½	.04½
.02¾	.05	.04½	.04¾	Flakes, 175 lb bbls wks....lb.	.....	.05	.05	.05
.....	.21	.21	.21	Nickel Chloride, bbls kegs....lb.	.21	.24	.24	.21
1918	.35	.35	.35	Oxide, 100 lb kegs NY.....lb.	.35	.38	.38	.35
1918	.09	.08½	.08¾	Salt dbl, 400 lb bbls NY....lb.	.09	.09¾	.09¾	.09
1918	.08¼	.08	.08½	Single, 400 lb bbls NY.....lb.	.08¼	.09	.09	.08¾
				Nicotine, free 40%, 8 lb tins,				
.....	1.25	1.10	1.24	cases.....lb.	1.25	1.30	1.30	1.25
.....	1.10	1.10	1.10	Sulfate, 10 lb tins.....lb.	1.10	1.15	1.15	1.10
.....	13.00	13.00	13.00	Nitre Cake, 500 lb bbls.....ton	13.00	14.00	14.00	13.00
				Nitrobenzene, redistilled, 1000				
.06½	.10½	.09½	.09½	lb drs wks.....lb.	.10½	.10½	.10½	.10½
				Nitrocellulose, regular drums				
.....	.40	.40	.40	wks.....lb.	.40	Nom.	Nom.	.40
				Low viscosity (soln only)				
.....	.55	.55	.55	Grade 1 drums, wks.....lb.	.55	Nom.	Nom.	.55
.....	.50	.50	.50	Grade 2 drums, wks.....lb.	.50	Nom.	Nom.	.50
3.05	3.60	3.35	3.53	Nitrogenous Material, bulk..unit	.....	3.60	3.60	3.35
1918	.25	.25	.25	Nitronaphthalene, 550 lb bbls.lb.	.....	.25	.25	.25
1918	.14	.14	.14	Nitrotoluene, 1000 lb drs wks.lb.	.14	.15	.15	.14
.16	.25	.25	.25	Nutgalls Aleppy, bags.....lb.	.25	Nom.	Nom.	.25
.15	.17	.17	.17	Chinese, bags.....lb	.17	.18	.18	.17
.....	.22	.22	.22	Powdered, bags.....lb	.22	.24	.24	.22
.08	.03½	.03½	.03½	Oak, tanks, wks.....lb	....	.03½	.03½	.03½
.08	.04	.04	.04	23-25% liq., 600 lb bbl wk .lb.	.04	.04½	.04½	.04
.....	45.00	45.00	45.00	Oak Bark, ground.....ton	45.00	50.00	50.00	45.00
.....	20.00	20.00	20.00	Whole.....ton	20.00	23.00	23.00	20.00
				Orange-Mineral, 1100 lb casks				
.07½	.14½	.13	.13½	NY.....lb.	.13	.13½	.13½	.13
.....	2.20	2.20	2.20	Orthoaminophenol, 50 lb kgs..lb.	2.20	2.25	2.25	2.20
.....	2.50	2.35	2.36½	Orthoanisidine, 100 lb drs....lb.	2.35	2.50	2.50	2.35
.....	.50	.50	.50	Orthochlorophenol, drums....lb.	.50	.65	.65	.50
.....	.18	.18	.18	Orthocresol, drums.....lb.	.18	.28	.28	.18
				Orthodichlorobenzene, 1000 lb				
1918	.06	.06	.06	drums.....lb	.06	.07	.07	.06
				Orthonitrochlorobenzene, 1200				
1918	.32	.32	.32	lb drs wks.....lb.	.32	.35	.35	.32
				Orthonitrotoluene, 1000 lb drs				
1918	.13	.13	.13	wks.....lb.	.17	.18	.18	.17
1918	.85	.85	.85	Orthonitrophenol, 350 lb dr...lb.	.85	.90	.90	.85
1918	.29	.25	.28	Orthotoluidine, 350 lb bbl 1c-1.lb.	.29	.31	.31	.29
				Orthonitroparachlorphenol, tins				
1918	.70	.70	.70	.....lb.	.70	.75	.75	.70
.....	.16	.16	.16	Osage Orange, crystals.....lb.	.16	.17	.17	.16
1918	.07	.07	.07	51 deg. liquid.....lb.	.07	.07½	.07	.07
.....	.14½	.14½	.14½	Powdered, 100 lb bags.....lb.	.14½	.15	.15	.14½
				Paraffin, refd, 200 lb cs slabs				
.04¾	.06½	.06½	.06½	123-127 deg. M. P.....lb.	.06½	.06¾	.06¾	.06¾
.05¼	.07½	.07½	.07½	128-132 deg. M.P.....lb.	.07½	.07¾	.07¾	.07¾
.06¼	.08	.08	.08	133-137 deg. M.P.....lb.	.08	.08½	.08½	.08
1918	.08¾	.08¼	.08¾	138-140 deg. M.P.....lb.	.08¾	.10	.10	.08¾
.....	.29	.26	.26½	Para Aldehyde, 110-55 gal drs.lb.	.26	.28	.28	.26
1918	1.00	1.00	1.00	Aminoacetanilid, 100 lb bg.lb.	1.00	1.05	1.05	1.00
				Aminohydrochloride, 100 lb kegs				
.....	1.25	1.25	1.25	.....lb.	1.25	1.30	1.30	1.25
.....	.15	.15	.15	Aminophenol, 100 lb kegs...lb.	.....	1.15	1.15	1.15
.....	.50	.50	.50	Chlorophenol, drums.....lb.	.50	.65	.65	.50
.....	.12	.12	.12	Coumarone, 330 lb drums..lb.	.....	.....	.....	.....
.....	2.25	2.25	2.25	Cymene, refd, 110 gal dr...gal.	2.25	2.50	2.50	2.25
				Dichlorobenzene, 150 lb bbls				
1918	.17	.17	.17	wks.....lb.	.17	.20	.20	.17
1918	.53	.50	.50½	Nitroacetanilid, 300 lb bbls.lb.	.50	.55	.55	.50
				Nitroaniline, 300 lb bbls wks				
1917	.52	.52	.52	.....lb.	.48	.49	.49	.48
				Nitrochlorobenzene, 1200 lb drs				
.....	.32	.32	.32	wks.....lb.	.....	.32	.32	.32
				Nitro-orthotoluidine, 300 lb				
1918	2.75	2.75	2.75	bbls.....lb.	2.75	2.85	2.85	2.75
1918	.50	.50	.50	Nitrophenol, 185 lb bbls....lb.	.50	.55	.55	.50
				Nitrosodimethylaniline, 120 lb				
.....	.92	.92	.92	bbls.....lb.	.92	.94	.94	.92
1918	.30	.25	.26	Nitrotoluene, 350 lb bbls...lb.	.....	.30	.30	.30
				Phenylenediamine, 350 lb bbls				
1918	1.20	1.15	1.18	.....lb.	1.15	1.20	1.20	1.15
				Toluenesulfonamide, 175 lb				
.....	.40	.40	.40	bbls.....lb.	.40	.41	.41	.40
				Toluenesulfonchloride, 410 lb				
.....	.20	.18	.19	bbls wks.....lb.	.20	.22	.22	.20
1918	.45	.38	.41	Toluidine, 350 lb bbls wk...lb.	.40	.42	.42	.40
				Paris Green, Arsenic Basis				
.11	.21	.21	.21	100 lb kegs.....lb.	.20	.21	.22	.20
.....	.19	.19	.19	500 lb kegs.....lb.	.17	.19	.20	.17
.12	.25	.25	.25	Persian Berry Ext., bbls.....lb.	.....	.....	.....	.....
.....	.02½	.02½	.02½	Petrolatum, Green, 300 lb bbl.lb.	.02½	.03	.03	.02½
1918	.18	.16	.17	Phenol, 250-100 lb drums.....lb.	.17	.20	.20	.17
				Phenyl - Alpha - Naphthylamine,				
1918	1.35	1.28	1.35	100 lb kegs.....lb.	.....	1.35	1.35	1.35
45.00	9.00	8.50	8.75	Phosphate Acid, 16% blk wks.ton	.....	9.00	9.00	9.00
				Phosphate Rock, f.o.b. mines	.....	.....	.....	.....
3.00	3.00	3.00	3.00	Florida Pebble, 68% basis..ton	3.00	3.15	3.15	3.00
2.00	3.50	3.50	3.50	70% basis.....ton	3.50	3.65	3.65	3.50
.....	4.00	3.85	3.96	72% basis.....ton	4.00	4.15	4.15	4.00
4.00	5.35	5.00	5.09	75-74% basis.....ton	.....	5.00	5.00	5.00
4.00	5.75	5.60	5.71½	75% basis.....ton	.....	5.75	5.75	5.75
5.75	6.25	6.00	6.19	77-76% basis.....ton	.....	6.25	6.25	6.25
4.50	5.50	5.00	5.12½	Tennessee, 72% basis.....ton	.....	5.00	5.00	5.00
				Phosphorous Oxychloride 175 lb				
.....	.35	.35	.35	cyl.....lb.	35	.40	.40	.35
.45	.65	.60	.62	Red, 110 lb cases.....lb.	. 60	.65	.65	.60
35	.32	.32	.32	Yellow, 110 lb cases wks.lb.	.....	.32	.32	.32
...	.46	.46	.46	Sesquisulfide, 100 lb cs.....lb.	.....	.46	.46	.46
....	.35	.35	.35	Trichloride, cylinders.....lb.	.....	.....	.....	.....
				Phthalic Anhydride, 100 lb bbls				
.....	.18	.18	.18	wks.....lb.	.18	.20	.20	.18

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Prices Current and Comment

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busier on contract shipments than on the former. Prices are being held according to the quoted levels.

Soda Caustic — Consuming demand is moderately good. While contract buyers are not ordering goods out at an unusual rate, the volume is satisfactory to the sellers. There has not been any change in the price situation.

Soda Chlorate — Owing to the entrance of an importing factor into this market, a leading domestic manufacturer has cut the price sharply to offset this competition and is taking business this week at 5¾c lb. for fair sized orders. This level is considerably below that of the imported and the latter will have considerable difficulty in meeting this figure. Consuming interest is normal.

Sodium Nitrate — Conditions here are very weak with but slack demand and overabundance of supply. This has resulted in further price reductions so that quotations are now at $2.30 per hundred pounds. From a purely local viewpoint, conditions should improve as the seasonal demand should make itself felt, and with the scarcity of ammonium sulfate, more activity should be noticed in this market. Reports from Chile, however, do not seem favorable for a strong market. Production is continuing at such a pace that producers are doing all in their power to develop new markets. In line with this, it is said that 150,000 tons of Chilean nitrate are being shipped to Germany to be sold as low as $2.15 per hundred pounds in an effort to break into the synthetic fertilizer market there. If they are successful in this attempt, it will have a revolutionary attempt upon the entire fertilizer market. This much however, seems evident, that production is being carried on at a tremendous pace which may necessitate dumping upon this market if the producers' plans abroad fail to work out.

Sodium Nitrite — Makers are experiencing a very good demand and at the openly quoted levels of 7½ @ 7¾c lb. for carlot parcels, considerable tonnage is being moved.

Starch — In sympathy with the recent rise in corn and corn products, a sharp upward left in prices was announced in this market. Powdered is now quoted at $3.57 @ $3.77 per hundred pounds, while pearl is at $3.47 @ $3.67 per hundred pounds. The market is strong and will doubtless continue so, as further advances in corn products are predicted before the end of the season. Potato is quoted at

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	40.00	37.00	38 50	Pigments Metallic, Red or Brown bags, bbls, Pa. wks.....ton	37.00	45.00	45.00	37.00
1918	.63	.63	.63	Pine Oil, 55 gal drums or bbls Destructive dist.....lb.	.63	.64	.64	.63
.....	8.00	8.00	8.00	Prime bbls.....bbl.	8.00	10.60	10.60	8.00
.34	.70	.66	.69	Steam dist. bbls.....gal.	.....	.70	.70	.70
37.50	40.00	40.00	40.00	Pitch Hardwood, wks.....ton	40.00	45.00	45.00	40.00
1.50	3.30	3.30	3.30	Plaster Paris, tech, 250 lb bbls .....bbl.	.....	3.30	3.30	3.30
				Potash				
.04½	.07½	.07½	.07½	Potash, Caustic, wks.....lb.	.....	.07½	.07½	.07½
.....	.07½	.07½	.07½	Imported casks c-l.....lb.	.....	.07½	.07½	.07½
8.36	9.00	9.00	9.00	Potash Salts, Rough Kainit 12.4% basis bulk.....ton	.....	9.00	9.00	9.00
.....	9.50	9.50	9.50	14% basis.....ton	.....	9.50	9.50	9.50
13.58	12.40	12.40	12.40	Manure Salts..... 20% basis bulk.....ton	.....	12.40	12.40	12.40
.....	18.75	18.75	18.75	30% basis bulk .....ton	.....	18.75	18.75	18.75
39.07	36.40	36.40	36.40	Potassium Muriate, 80% basis bags.....ton	.....	36.40	36.40	36.40
25.04	27.00	27.00	27.00	Pot. & Mag. Sulfate, 40% basis bags.....ton	.....	27.00	27.00	27.00
47.57	47 30	47.30	47.30	Potassium Sulfate, 90% basis bags.....ton	.....	47.30	47.30	47.30
.08	.09	.09	.09	Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.09	.09½	.09½	.09
.06¼	.08¼	.08	.08¼	Bichromate Crystals, 725 lb casks.....lb.	.08¼	.08¾	.08¾	.08¼
.....	.12	.11	.11	Powd., 725 lb cks wks....lb.	.12	.12½	.12½	.12
.....	.16	.16	.16	Binoxiate, 300 lb bbls.....lb..	.16	.17	.17	.16
.....	.30	.30	.30	Bisulfate, 100 lb kegs.....lb.	.....	.30	.30	.30
.03¾	.05¾	.05¾	.05¾	Carbonate, 80-85% calc. 800 lb casks.....lb.	.05¾	.05¾	.05¾	.05¾
.07½	.08½	.08½	.08½	Chlorate crystals, powder 112 lb keg wks.....lb.	.08½	.09	.09	.08½
.....	.08¾	.08¼	.08¼	Potassium Chlorate, Imp 112 lb kegs NY.....lb.	.08¼	.08½	.08½	.08¼
	.05¼	.05¼	.05¼	Chloride, crys bbls.....lb.	.05¾	.05½	.05½	.05¾
.....	.27	.27	.27	Chromate, kegs.....lb.	.27	.28	.28	.27
.20	.55	.55	.55	Cyanide, 110 lb. cases .....lb.	.55	.57½	.57½	.55
.13	.11½	.11½	.11½	Metabisulfite, 300 lb. bbl..lb.	.11½	.12	.12	.11½
.14	.16	.16	.16	Oxalate. Neut. 225 lb. bbls.lb.	.16	.17	.17	.16
.....	.11	.11	.11	Perchlorate, casks wks.....lb.	.11	.12	.12	.11
.09¾	.15½	.14½	.14½	Permanganate, USP, crys 500 & 100 lb drs wks.....lb.	.15½	.15½	.15½	.15½
.21	.39	.37½	.38	Prussiate, red, 112 lb keg...lb.	.37½	.38	.38	.37½
.12½	.18	.18	.18	Yellow, 500 lb casks.....lb.	.18	.18½	.18½	.18
.....	.51	.51	.51	Tartrate Neut, 100 lb keg...lb.	.....	.51	.51	.51
.....	.25	.25	.25	Titanium Oxalate, 200 lb bbls .....lb.	.....	.25	.25	25
.....	.04	.04	.04	Pumice Stone, lump bags.....lb.	.04	.05	.05	.04
.04½	.04½	.04½	.04½	250 lb bbls.....lb.	.04½	.06	.06	.04½
.01½	.02½	.02½	.02½	Powdered, 350 lb bags.....lb.	.02½	.03	.03	.02½
2.65	3.75	3.75	3.75	Putty, commercial, tubs..100 lb.	.....	.03¼	.03¼	.03¼
4.25	5.50	5.50	5.50	Linseed Oil, kegs.....100 lb.	.....	.05½	.05½	.05½
.....	3.00	1.50	.94	Pyridine, 50 gal drums.....gal.	.....	1.50	1.50	1.50
.10½	.13	.12	.12½	Pyrites, Spanish cif Atlantic ports bulk.....unit	.13	.13¾	.13¾	.13
.02½	.03	.03	.03	Quebracho, 35% liquid tks....lb.	.03	.03½	.03½	.03
.....	.03½	.03½	.03½	450 lb bbls c-1.....lb.	.03½	.04	.04	.03½
.....	.04	.04	.04	35% Bleaching, 450 lb bbl..lb.	.04	.05	.05	.04
.04¼	.05	.04¼	.04¼	Solid, 63%, 100 lb bales cif.lb.	.05¼	.05¾	.05¾	.05
.....	.05	.05	.05	Clarified, 64%, bales.....lb.	.....	.05½	.05½	.05
.01½	.06½	.06½	.06½	Quercitron, 51 deg liquid 450 lb bbls.....lb.	.05½	.06	.06	.05½
.02¼	.10	.10	.10	Solid, 100 lb boxes.....lb.	.10	.13	.13	.10
22.00	14.00	14.00	14.00	Bark, Rough.....ton	.....	14.00	14.00	14.00
.....	34.00	34.00	34.00	Ground.....ton	34.00	35.00	35.00	34.00
1918	.45	.45	.45	R Salt, 250 lb bbls wks.....lb.	.45	.46	.46	.45
.03	.18	.18	.18	Red Sanders Wood, grd bbls..lb.	.....	.....	.....	.....
1918	1.25	1.25	1.25	Resorcinol Tech, cans.....lb.	1.80	2.00	2.00	1.80
.27	.67	.57	.59	Rosin Oil, 50 gal bbls, first run .....gal.	.....	.57	.57	.57
.38	.72	.62	.64	Second run.....gal.	.....	.62	.62	.62
4.37½	13.00	8.50	10.08½	Rosins, 600 lb bbls 280 lb...unit B.....	.....	9.05	9.10	9.00
4.42½	13.00	8.50	10.17	D.....	.....	9.55	9.65	9.20
4.42½	13.15	8.50	10.23	E.....	.....	9.75	9.75	9.40
4.47½	13.20	8.50	10.49	F.....	.....	9.95	9.95	9.45
4.47½	13.25	8.50	10.58½	G.....	.....	10.00	10.00	9.55
4.47½	13.30	8.50	10.65	H.....	.....	10.05	10.05	9.50
4.55	13.35	8.55	10.79½	I.....	.....	10.05	10.10	9.60
4.49½	14.80	8.65	11.05	K.....	.....	10.20	10.15	9.70
5.47½	15.00	8.80	11.15½	M.....	.....	10.20	10.30	9.85
6.12½	15.85	9.15	11.62	N.....	.....	10.75	11.00	10.45
6.67½	16.60	10.50	12.58	WG.....	.....	11.25	11.65	11.20
6.92½	18.55	12 00	14.34	WW.....	.....	12.00	12.65	12.00
.....	24.00	24.00	24.00	Rotten Stone, bags mines....ton	24.00	30.00	30.00	24.00
.....	.07	.07	.07	Lump, imported, bbls. ....lb.	.07	.08	.08	.07
.05½	.09	.09	.09	Selected bbls.....lb.	.09	.12	.12	.09
.02½	.02	.02	.02	Powdered, bbls.....lb.	.02	.05	.05	.02
.02¾	.04½	.04½	.04½	Sago Flour, 150 lb bags.....lb.	.04½	.05	.05	.04½
.60	.90	.90	.90	Sal Soda, bbls wks.....100 lb.	.....	.....	.....	.....
11.00	19.00	19.00	19.00	Salt Cake, 94-96% c-l wks...ton	19.00	20.00	20.00	19.00
8.00	15.00	15.00	15.00	White, 87% wks.....ton	15.00	17.00	17.00	15.00
.04¾	.06½	.06½	.06½	Saltpetre, double refd granular 450-500 lb bbls.....lb.	.06½	.06½	.06½	.06½
.....	.01½	.01½	.01½	Satin, White, 500 lb bbls.....lb.	.....	.01½	.01¼	.01½
.18½	.66	.47	.57	Shellac Bone dry bbls.....lb.	.49	.50	.61	.49
.15	.57	.41	.48	Garnet, bags.....lb.	.46	.47	.55	.46
.14½	.65	.40	.52½	Superfine, bags.....lb.	.47	.48	.58	47
.15½	.37	.57	.49	T. N. bags.....lb.	.42	.43	.55	.42
1918	.50	.50	.50	Schaeffer's Salt, kegs.....lb.	.53	.57	.57	.53

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1917 71.7c - Feb. 1928 68.4c

5¾c @ 6¾c lb. and soluble at 8c @ 8½c lb.

Tankage — Ground was available at $4.90 @ 10c per unit, a 5c reduction since last quoted. Otherwise the market continues unchanged with fair demand.

Tin Salts — Have again declined over the month, based on lower tin prices and the current market is now held at 15¾c lb. for bichloride; 39c lb. for crystals; 34c lb. for tetrachloride and 51½c lb. for metallic.

Turpentine — Although the usual fluctuations have occurred, the market in general has been firm during the month and prices are at about the same level as they held when last quoted. Business has been rather limited and it is expected that this condition will continue for several weeks yet as any great supplies of the new crop will not be available until April. At the present time, there are liberal stocks available but they are said to be in firm hands. Much of this will in all probability be disposed of before the new crop becomes marketable. Most factors look for conditions during the coming season to be much better than has been indicated with prices correspondingly better. It is reported that sales of May-August futures have been made at 53c gal. in Savannah. The spot market early this month was at 60c @ 64½c gal., with distilled wood ten points lower.

Valonia — Stocks of cups are now completely exhausted and prices are nominal. There has been no news regarding crop from the primary market and as a consequence prices on the 42 per cent. beards have been maintained at $74 @ $76 ton, while mixtures are quoted at $64 ton.

Vermilion — Lower prices on quicksilver have occasioned subsequent reductions in English, which is now being quoted at $1.75 @ $1.85 lb. in a strong market.

Zinc Ammonium Chloride — Domestic manufacturers meeting imported competition wherever noted. The market is about steady with most sales made in this territory at $5.70 100 lbs., though this level has been shaded in some few cases. Buying interest is dull at the moment.

OILS AND FATS

Chinawood Oil — Since last reported in these pages, prices have gradually declined so that spot price which was then at 16½c @ 17c lb. is now quoted as low as 15¼c @ 15½c lb. Similarly, prices at the Coast have declined

1914 July	1927 High	1927 Low	1927 Aver.		Current Market		1928 High	1928 Low
.....	6.00	6.00	6.00	Silica, Crude, bulk mines....ton	8.00	11.00	11.00	8.00
.....	15.00	15.00	15.00	Refined, floated bags.....ton	22.00	30.00	30.00	22.00
.....	32.00	32.00	32.00	Air floated bags.....ton	.....	.....	.....	.....
.....	55.00	55.00	55.00	Extra floated bags.....ton	32.00	40.00	40.00	32.00
10.00	15.00	15.00	15.00	Soapstone, Powdered, bags f.o.b. mines.....ton	15.00	22.00	22.00	15.00
				Soda				
.67½	1.32½	1.32½	1.32½	Soda Ash, 58% dense, bags c-1 wks.....100 lb.	.....	1.40	1.40	1.40
.57½	2.14	2.04	2.12	58% light, bags del NY.100 lb.	2.04	2.29	2.29	2.04
.....	1.32½	1.32½	1.32½	Contract, bags c-1 wks.100 lb.	.....	1.32½	1.32½	1.32½
2.50	4.16	4.06	4.14½	Soda Caustic, 76% grnd & flake drums del NY.....100 lb.	4.16	4.21	4.21	4.16
.....	3.76	3.66	3.74¾	76% solid drs del NY...100 lb.	3.76	3.91	3.91	3.76
.....	3.00	3.00	3.00	Contract, c-1 wks.....100 lb.	.....	3.00	3.00	3.00
.03¾	.04½	.04½	.04½	Sodium Acetate, crystals, 450 lb bbls wks.....lb.	.04½	.05	.05	.04½
.....	.19	.18	.18½	Arsenate, drums.. .....lb.	.....	.....	.....	.....
.....	1.00	1.00	1.00	Arsenite, drums.....gal.	.....	.....	.....	.....
1.00	2.41	2.41	2.41	Bicarb., 400 lb bbl NY..100 lb.	.....	2.41	2.41	2.41
.04¾	.06½	.06½	.06½	Bichromate, 500 lb cks wks.lb.	.06½	.06½	.06¾	.06½
.02¾	.08½	.08½	.08½	Bisulfite, 500 lb bbl wks....lb.	.....	.04	.04	.04
.60	1.30	1.30	1.30	Carb. 350 lb bbls NY...100 lb.	1.30	1.35	1.35	1.30
.07¼	.06½	.06½	.06½	Chlorate, 112 lb kegs wks...lb	.05¾	06¼	.06¾	.05¾
.....	12.00	12.00	12.00	Chloride, technical.....ton	12.00	13.00	13.00	12.00
.22	.20	.20	.20	Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.....	.20	.20	.20
1918	.08¾	.08[a]	.08¾	Fluoride, 300 lb bbls wks...lb.	.08¾	.09	.09	.08¾
.....	.22	.22	.22	Hydrosulfite, 200 lb bbls f.o.b. wks.....lb.	.22	.24	.24	.22
.....	.05	.05	.05	Hypochloride solution, 100 lb cbys.....lb.	.....	.05	.05	.05
1.40	2.65	2.65	2.65	Hyposulfite, tech, pea crys 375 lb bbls wks....100 lb.	2.65	3.05	3.05	2.65
1.30	2.40	2.40	2.40	Technical, regular crystals 375 lb bbls wks... 100 lb.	2.40	2.65	2.65	2.40
.....	.70	.45	.62	Metanilate, 150 lb bbls.....lb.	.....	.45	.45	.45
.....	.02½	.02½	.02½	Monohydrate, bbls.....lb.	.....	.....	.....	.....
1918	.55	.55	.55	Naphthionate, 300 lb bbl...lb.	.55	.57	.57	.55
2.12½	2.67	2.25	2.52½	Nitrate, 92%, crude, 200 lb bags c-1 NY.....100 lb.	.....	2.30	2.45	2.30
.05¾	.08¼	.08	.08	Nitrite, 500 lb bbls spot ...lb.	.08	.08¼	.08¼	.08
.....	.25	.25	.25	Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb	.25	.27	.27	.25
.....	.20	.20	.20	Oxalate Neut, 100 lb kegs..lb.	.20	.23	.23	.20
.....	3.90	3.90	3.90	Paratoluene, tri-sodium, tech. 100 lb bbls c-1....100 lb.	.....	3.90	3.90	3.90
.....	.08	.08	.08	Sulfonate, 175 lb bbls....lb.	.08	.09	.09	.08
.19	.21	.21	.21	Perborate, 275 lb bbls.....lb.	.21	.22	.22	.21
2.12½	3.25	3.25	3.25	Phosphate, di-sodium, tech. 550 lb bbls.....100 lb.	3.25	3.55	3.55	3.25
.....	.69	.69	.69	Picramate, 100 lb kegs.....lb.	.69	.72	.72	.69
.08¾	.12	.11	.12	Prussiate, Yellow, 350 lb bbl wks.....lb.	.12	.12½	.12½	.12
.....	.13½	.13½	.13½	Pyrophosphate, 100 lb keg..lb.	.13½	.14	.14	.13½
.02	1.20	1.20	1.20	Silicate, 40 deg clear 55 gal drs wks.....100 lb.	1.20	1.45	1.45	1.20
.02	.85	.85	.85	40 deg turbid 55 gal drs wks.....100 lb.	.85	1.10	1.10	.85
.....	.04½	.04½	.04½	Silicofluoride, 450 lb bbls NY .....lb.	.04½	.05	.05	.04½
.....	.48½	.48½	.48½	Stannate, 100 lb drums.....lb.	.48½	.49	.49	.48½
.....	.20	.20	.20	Stearate, bbls.....lb.	.20	.29	.29	.20
.....	.16	.16	.16	Sulfanilate, 400 lb bbls.....lb.	.16	.18	.18	.16
.....	.02¼	.02¼	.02¼	Sulfate Anhyd., 550 lb bbls c-1 wks.....lb.	.02¼	.02¾	.02¾	.02½
.01½	.02½	.02½	.02½	Sulfide, 30% crystals, 440 lb bbls wks.....lb.	.02½	.02¾	.02¾	.02½
.....	.03½	.03½	.03½	62% solid, 650 lb drums 1c-1 wks.....lb.	.03½	.04	.04	.03½
.02½	.03½	.03½	.03½	Sulfite, crystals, 400 lb bbls wks.....lb.	.03½	.03½	.03½	.03½
.....	.40	.40	.40	Sulfocyanide, bbls.....lb.	.40	.50	.50	.40
.....	.85	.80	.82½	Tungstate, tech, crystals, kegs .....lb.	.80	.85	.85	.80
1917	.40	.35	.37	Solvent Naphtha, 110 gal drs wks.....gal.	.35	.40	.40	.35
1918	.01¾	.01¾	.01¾	Spruce, 25% liquid, bbls.....lb.	.....	.01¾	.01¾	.01¾
1918	.01	.01	.01	25% liquid, tanks wks.....lb.	.....	.01	.01	.01
.....	.02	.02	.02	50% powd., 100 lb bag wks.lb.	.02	.02½	.02½	.02
.....	3.22	3.07	3.14½	Starch, powd., 140 lb bags c-1 .....100 lb.	3.57	3.77	3.77	3.07
1.99	3.12	2.97	3.03	Pearl, 140 lb bags.....100 lb.	3.47	3.67	3.67	2.97
.05½	.06	.04½	.05½	Potato, 200 lb bags c-1.....lb	.05¾	.06¾	.06¾	.05¾
.05½	.06½	.06½	.06½	Imported bags.....lb	.06	.06¾	.06¾	.06
.05½	.08	.06	.07	Soluble.....lb.	.08	.08½	.08½	.08
.07	.09½	.09	.09½	Rice, 200 lb bbls.....lb.	.09½	.10	.10	.09½
.04¼	.06½	.06½	.06½	Wheat, thick bags.....lb.	.06½	.07	.07	.06½
.04¼	.09½	.09½	.09½	Thin bags.....lb.	.09½	.10	.10	.09½
1918	.07¼	.07¼	.07¼	Strontium carbonate, 600 lb bbls wks.....lb	.07¼	.07½	.07½	.07¼
.07¼	.08¼	.08	.08	Nitrate, 600 lb bbls NY....lb.	.08¼	.09	.09	.08¼
				Sulfur				
1.85	2.05	.205	2.05	Sulfur Brimstone, broken rock, 250 lb bag c-1.....100 lb.	.....	2.05	2.05	2.05
.....	18.00	18.00	18.00	Crude, f.o.b. mines.... ton	18.00	19.00	19.00	18.00
.....	2.40	2.40	2.40	Flour for dusting 99½%, 100 lb bags c-1 NY.....100 lb.	.....	2.40	2.40	2.40
2.00	2.50	2.50	2.50	Heavy bags c-1.....100 lb.	.....	2.50	2.50	2.50
2.20	3.45	3.45	3.45	Flowers, 100%, 155 lb bbls c-1 NY.....100 lb.	.....	3.45	3.45	3.45
1.85	2.65	2.65	2.65	Roll, bbls 1c-1 NY.....100 lb.	2.65	2.85	2.85	2.65

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - Feb. 1928 68.4c

from 14¾c lb. to 13½c lb. with April-May shipments at 12¾c. lb. While it is true that the market in China has declined somewhat, the decline here is due chiefly to speculative conditions existing in the market. Lack of active interest has forced dealers to constantly lower prices in an effort to dispose of supplies they had been holding for expected high prices.

Coconut Oil — All prices have declined between ⅛c @ ¼c lb. since last quoted. Conditions have been very dull with unusual lack of demand. At one time, shortly after the middle of January it was said that tanks of Manila at the Coast could be secured as low as 8c @ 8⅛c lb. but any sales at that price could not be traced. It is expected that there will be little change in present conditions before the summer. The copra situation is such that prices can not very well go lower while prevailing lack of demand should prevent higher prices.

Corn Oil — A rather paradoxical situation exists here. Corn is higher in price, so that one large producer of corn products advanced all prices recently. On the other hand, crude corn oil is distinctly lower than when last reported, now being quoted at 8⅜c @ 8½c lb., a decline, during the month, of 1⅝c lb. The only explanation seems to be in the fact that crude corn oil is acting in sympathy with low cottonseed oil prices.

Cottonseed Oil — The past month has witnessed the usual fluctuation in prices, none of which, however, were very wide in range. The prevailing price tendency over the four weeks has been downward so that spot price on PSY, which was then at 10c lb. is now at 9¼c lb. Crude oil has also declined slightly to 7⅛c lb. Futures have not declined proportionately with spot, although prices on April-June delivery are somewhat lower at 9.50c lb.

Greases — White has continued to decline to such a point that there is hardly any doubt as to its ultimate destination being the soap kettle, for it is now quoted at 9¼c @ 9½c lb., a decline of ¾c lb. during the month. Yellow has again held steady at 7⅞c @ 8c lb., but brown has declined gradually to 7c @ 7⅛c lb.

Lard Oil — In common with all of the animal group, prices of this commodity have declined during the month. Prime is now at 15¼c lb., extra at 12¾c lb., and extra No. 1 at 11¾c lb. Off prime alone has remained unchanged at 13¾c lb. Business has been slack, and both the market here and in the West, weak.

Linseed Oil — Has been increasingly active recently although the price tendency since last reported, has been downward. Five barrel lots are now quoted at

1914 July	1927 High	1927 Low	1927 Aver.		Current Market	1928 High	1928 Low
				Sulfur Chloride, red, 700 lb drs			
.....	.05	.05	.05	wks.....lb.	.05	.05½	.05½	.05
.....	.03¾	.03½	.03½	Yellow, 700 lb drs wks.....lb.	.03½	.04½	.04½	.03½
.....	.08	.08	.08	Sulfur Dioxide, 150 lb cyl.....lb.	.08	.08½	.08½	.08
.....	.17	.17	.17	Extra, dry, 100 lb cyl.....lb.	.17	.19	.19	.17
.....	.65	.65	.65	Sulfuryl Chloride, 600 lb dr...lb	.10	.65	.65	.10
.....	.11	.11	.11	Stainless, 600 lb bbls.....lb.	.11	.11½	.11½	.11
.....	.05	.05	.05	Extract, 450 lb bbls.....lb.	.05½	.06	.06	.05½
.....	130.00	130.00	130.00	Sicily Leaves, 100 lb bg...ton	.....	130.00	130.00	130.00
62.00	80.00	72.00	73.75	Ground shipment.....ton	.....	72.00	72.00	72.00
40.00	55.00	55.00	55.00	Virginia, 150 lb bags.....ton	55.00	60.00	60.00	55.00
.....	12.00	12.00	12.00	Talc, Crude, 100 lb bgs NY..ton	12.00	15.00	15.00	12.00
15.00	16.00	16.00	16.00	Refined, 100 lb bgs NY..ton	16.00	18.00	18.00	16.00
15.00	30.00	30.00	30.00	French, 220 lb bags NY...ton	30.00	35.00	35.00	30.00
.....	38.00	38.00	38.00	Refined, white, bags....ton	38.00	45.00	45.00	38.00
35.00	40.00	40.00	40.00	Italian, 220 lb bags NY...ton	40.00	50.00	50.00	40.00
.....	50.00	50.00	50.00	Refined, white, bags....ton	50.00	55.00	55.00	50.00
3.50	4.85	4.00	4.41	Tankage Ground NY.....unit	.....	4.90&10	5.10&10	4.90&10
3.10	5.25	3.75	4.29	High grade f.o.b. Chicago.unit	.....	3.90&10	3.90&10	3.90&10
.....	5.25	4.00	4.38½	South American cif.....unit	.....	5.00&10	4.95&10	4.95&10
.02	.04½	.04½	.04½	Tapioca Flour, high grade bgs.lb.	.04½	.05	.05	.04½
.01¾	.03¾	.03½	.03½	Medium grade, bags....lb.	.03¾	.04	.04	.03¾
.....	.26	.26	.26	Tar Acid Oil, 15%, drums...gal.	.26	.27	.27	.26
.....	.29	.29	.29	25% drums.....gal.	.29	.30	.30	.29
.....	.07	.07	.07	Coke Oven, tanks wks.....lb	.07	.08	.08	.07
6.50	16.00	13.50	14.87½	Kiln Burnt, bbl.....bbl.	.....	13.50	13.50	13.50
6.76	18.50	13.50	15.38½	Retort, bbls.....bbl.	13.50	15.00	15.00	13.50
				Terra Alba Amer. No. 1, bags or				
.75	1.15	1.15	1.15	bbls mills.....100 lb.	1.15	1.75	1.75	1.15
.60	1.50	1.50	1.50	No. 2 bags or bbls...100 lb.	1.50	2.00	2.00	1.50
.80	2.00	2.00	2.00	Imported bags.....100 lb.	.02	.02½	.02½	.02
.....	.20	.20	.20	Tetralene, 50 gal drs wks.....lb.	.....	.20	.20	.20
.....	.22	.22	.22	Thiocarbanilid, 170 lb bbl.....lb.	.22	.24	.24	.22
				Tin Bichloride, 50% soln, 100 lb				
.11¼	.20½	.17½	.19	bbls wks.....lb.	.....	.15¾	.17½	.15¾
.23	.48	.41½	.45	Crystals, 500 lb bbls wks...lb.	.....	.39	.41½	.39
.....	.71½	.58	.65	Metal Straits NY.....lb.	.....	.51½	.58	.51½
.36	.75	.70	.71	Oxide, 300 lb bbls wks.....lb.	.....	.57	.75	.57
				Tetrachloride, 100 lb drs wks				
.....	.48	.35½	.39	.....lb.	.....	.33	.35½	.33
.....	.40	.40	.40	Titanium Oxide, 200 lb bbl...lb.	.....	.40	.40	.40
.....	.13½	.13½	.13½	Pigment, bbls wks.....lb.	.13½	.14	.14	.13½
1918	.40	.40	.40	Toluene, 110 gal drs wks.....lb.	.....	.40	.40	.40
.....	.35	.35	.35	8000 gal tank cars wks.....lb.	.....	.35	.35	.35
1918	.90	.90	.90	Toluidine, 350 lb bbls.....lb.	.90	.94	.94	.90
1918	.31	.31	.31	Mixed, 900 lb drs wks.....lb.	.31	.32	.32	.31
.....	.85	.85	.85	Toner Lithol, red, bbls.....lb.	.85	.90	.90	.85
.....	.75	.75	.75	Para, red, bbls.....lb.	.75	.80	.80	.75
1918	1.75	1.75	1.75	Toluidine.....lb.	1.75	1.80	1.80	1.75
.....	3.60	3.60	3.60	Triacetin, 50 gal drs wks.....lb.	3.60	3.90	3.90	3.60
.....	.36	.36	.36	Tricresyl Phosphate, drs.....lb.	.36	.50	.50	.36
.....	.70	.69	.69	Triphenylguanidine.....lb.	.69	.73	.73	.69
.....	.70	.70	.70	Phosphate, drums.....lb.	.70	.75	.75	.70
.....	2.50	2.50	2.50	Tripoli, 500 lb bbls.....100 lb.	2.50	3.00	3.00	2.50
.49	.86	.53½	.65	Turpentine Spirits, bbls.....gal.	.60	.64½	.64½	.60
.34	.76	.46	.55	Wood Steam dist. bbls....gal.	.50	.54½	.54½	.46
.....	.18	.18	.18	Urea, pure, 112 lb cases.....lb.	.18	.20	.20	.18
				Valonia Beard, 42%, tannin				
.....	70.00	66.00	61.52	bags.....ton	74.00	76.00	76.00	74.00
.....	49.50	39.00	43.96	Cups, 30-31% tannin.....ton	.....	Nom.	Nom.	Nom.
.....	68.00	43.00	48.52	Mixture, bark, bags.....ton	.....	64.00	64.00	64.00
.55	1.95	1.55	1.94¾	Vermilion, English, kegs.....lb.	1.75	1.85	1.95	1.75
.....	59.00	49.50	53.71	Wattle Bark, bags.....ton	.....	66.00	76.00	66.00
				Extract 55%, double bags ex-				
.....	.05½	.05½	.05½	dock.....lb.	.....	.06½	.06½	.05¾
				Whiting, 200 lb bags, c-1 wks				
.45	1.25	1.25	1.25	.....100 lb.	.....	1.25	1.25	1.25
.....	13.00	13.00	13.00	Alba, bags c-1 NY.....ton	.....	13.00	13.00	13.00
.55	1.35	1.35	1.35	Gilders, bags c-1 NY...100 lb.	.....	1.35	1.35	1.35
				Zinc Ammonium Chloride powd.,				
.....	.06¾	.06¾	06½	400 lb bbls.....lb.	.....	5.70	.05¾	5.70
.08½	.09½	.09½	.09½	Carbonate Tech, bbls NY..lb.	.09½	.10	.10	.09½
				Chloride Fused, 600 lb drs.				
.04½	.06	.06	.06	wks.....lb.	.....	.06	.06	.06
.04½	.06½	.06½	.06½	Gran., 500 lb bbls wks.....lb.	.06½	.06½	.06½	.06½
.....	3.00	3.00	3.00	Soln 50%, tanks wks...100 lb.	.....	3.00	3.00	3.00
.....	.40	.40	.40	Cyanide, 100 lb drums.....lb.	.40	.41	.41	.40
.05½	.09	.09	.09	Dust, 500 lb bbls c-1 wks...lb.	.....	.09	.09	.09
				Metal, high grade slabs c-1				
.....	7.35	6.40	6.66	NY.....100 lb.	.....	6.40	6.40	6.40
.05¾	.07¾	07¾	.07¾	Oxide, American bags wks..lb.	.07¾	.07¾	.07¾	.07¾
.06½	.10½	.10½	.10½	French, 300 lb bbls wks..lb.	.10½	.12½	.12½	.10½
.02½	.03½	03	.03½	Sulfate, 400 bbl wks.....lb.	.03½	.03½	.03½	.03½
.....	.30	.30	.30	Sulfide, 500 lb bbls.....lb.	.30	.32	.32	.30
.....	.29	.29	.29	Sulfocarbolate, 100 lb keg..lb.	.29	.30	.30	.29
.....	.38	32	.37	Xylene, 10 deg tanks wks....lb.	.....	.32	.32	.32
.....	.36	.30	.35	Commercial, tanks wks....lb.	.30	.32	.32	.30
1918	.35	.35	.35	Xylidine, crude.....lb.	.....	.38	.38	.38
.....	.02½	.02½	.02½	Zirconium Oxide, Nat. kegs..lb.	.02½	.03	.03	.02½
.....	.45	.45	.45	Pure kegs.....lb.	.45	.50	.50	.45
.....	.08½	.08	.08	Semi-refined kegs.....lb.	.08	.10	.10	.08

Oils and Fats

.08	.14	.13	.13	Castor, No. 1, 400 lb bbls....lb.	.14	.14½	.14½	.14
.08	.14	.12½	.13½	No. 3, 400 lb bbls.....lb.	.13½	.14	.14	.13½
.....	.18	.17	.18	Blown, 400 lb bbls.....lb.	.....	.17	.17	.17
.06½	.31	.13¾	.19	China Wood, bbls spot NY...lb.	.15½	.15½	.17	.15½
.05¾	.18	.12½	.16¼	Tanks, spot NY.....lb.	.....	Nom.	Nom.	Nom.
				Coast tanks, Mar.....lb.	.....	.13½	.14¾	.13½
1918	.12	.12	.12	Cocoanut, edible, bbls NY....lb.	...	.11½	.11½	.11½
.09½	.09¾	.09	.09	Ceylon, 375 lb bbls NY....lb.	.09½	.09¾	.10	.09½
.08½	.08¾	.08	.08¾	8000 gal tanks NY.....lb.	.08¾	.08¾	.08¾	.08¾
.10½	.10½	.09½	.10	Cochin, 375 lb bbls NY....lb.	.10½	.10½	.10½	.10½

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Prices Current and Comment

Standard Purchasing Power of the Dollar: July 1914 $1.00 - Jan. 1927 68.7c - July 1927 71.7c - Feb. 1928 68.4c

10.2c lb., barrels spot at 9.8c lb. and in tanks at 9.0c lb. The recent buying has chiefly been confined to April and May delivery.

Neatsfoot Oil — Twenty degree alone has remained unchanged. Extra is lower at 12c lb., while pure, after a drop to 15½c lb. is back at the same position in which it was last reported at 15¾c lb.

Oleo Oil — The drop in price in this market has been gradual but quite pronounced, ranging from 1¾c lb @ 2c No. 1 is now at 14½c @ 14¾c lb., No. 2 at 12¾c @ 13c lb., and No. 3 at 11¾c @ 12c lb.

Olive Oil — All statistics and logic to the contrary, denatured oil has advanced in price. The new crop lived up to all expectations as to size, but producers are storing the oil instead of shipping it to the exporters. They are being aided in their efforts to maintain or raise existing prices by the Spanish government which has passed a law permitting banks to advance loans upon olive oil in storage. The chief sufferer seems to be the exporter who is doing little business and the net result here has been an advance to $1.25 @ $1.30 gal. Edibile oil is unchanged but spot price on foots has also advanced to 9⅞c @ 10c lb.

Palm Oil — Lagos is becoming scarce and after dropping as low as 7⅛c lb. about the middle of February, is now apparently on the upward trend, being quoted at 7¾c @ 8c lb. Niger has declined slightly to 7c @ 7⅛c lb.

Perilla Oil — Increasing supplies have reduced prices on tanks at the Coast to 10¼c @ 10½c lb.

Rapeseed Oil — After going slightly higher after last reported, English prices have now become nominal due to the fact that there is none to be had at present. Japanese has been strong, went as high as 88c gal. and is now being quoted at 87c lb. in a firm market.

Sesame Oil — Prices on white have become purely nominal while yellow has declined considerably to 12¾c @ 13c lb.

Stearine Oleo — In common with the other members of the group, the decline here has occurred week by week until prices now quoted are 9⅜c @ 9½c lb.

Tallow — Large imports from South America, overabundant supplies, and weak conditions in the Chicago market, all combined to cause a sudden drop in extra about the middle of last month. Since then the market has steadied somewhat although a price of 8½c lb. has been maintained. Edible is also lower at 10c lb.

Tallow Oil — The market is now steady at lower prices than last quoted. Acidless in barrels is now at 11½c lb. and in tanks at 10½c lb.

1914 July	1927 High	1927 Low	1927 Aver.			Current Market	1928 High	1928 Low
.05⅞	.10	.08⅛	.09⅛	Tanks NY	lb.	.....	.09⅛	.09⅛	.09⅛
.....	.09⅜	.08⅞	.09⅛	Manila, bbls NY	lb.	.09⅜	.09⅜	.10	.09⅛
.....	.08⅞	.08⅛	.08⅝	Tanks NY	lb.	.08⅜	.08⅜	.08⅞	.08⅛
.....	.08⅜	.08	.08⅛	Tanks, Pacific Coast	lb.	.08⅛	.08⅜	.08⅛	.08⅛
.36⅛	.66	.63	.64⅛	Cod, Newfoundland, 50 gal bbls	gal.	.63	.65	.65	.63
.36⅛	.59	.59	.59	Tanks NY	lb	.62	.63	.63	.62
				Cod Liver see Chemicals					
1918	.06	.06	.06	Copra, bags	lb.	.06	.06½	.06½	.06
.06½	.11	.07	.10	Corn, crude, bbls NY	lb.	.....	.10⅜	.11	.10⅛
.06¼	.09⅛	.07	.08⅛	Tanks, mills	lb.	.08⅛	.08⅛	.10	.08⅛
1916	.14	.10⅛	.12	Refined, 375 lb bbls NY	lb.	.....	.12⅛	.12⅛	.12⅛
1916	.12	.11	.11	Tanks	lb.	.....	.11⅛	.11⅛	.11⅛
.06	.09⅛	.06⅛	.08	Cottonseed, crude, mill	lb.	.....	.07⅛	.09	.07⅛
.07⅛	.11⅛	.08 1/5	.10	PSY, 100 lb bbls spot	lb.	.....	.09⅛	.10⅛	.09⅛
				Apr—June	lb.	.....	.09⅛	10.45	.09⅛
.02⅞	.04⅛	.04⅛	.04⅛	Degras, American, 50 gal bbls NY	lb.	.04⅛	.04⅛	.04⅛	.04⅛
.03⅛	.04⅛	do	do	English, brown, bbls NY	lb.	.04⅛	.04⅛	.04⅛	.04⅛
.03⅛	.05⅛	.05⅛	.05⅛	Light, bbls NY	lb.	.05⅛	.05⅛	.05⅛	.05⅛
.04⅞	.07⅛	.06	.06⅜	Greases, Brown	lb.	.07	.07⅛	.07⅛	.07
.05⅞	.08	.06⅛	.07⅛	Yellow	lb.	.07⅞	.08	.08	.07⅛
.06⅛	.10⅛	.08⅛	.09⅜	White, choice bbls NY,	lb.	.09⅛	.09⅛	.10⅛	.09⅛
.....	.....	.....	.....	Herring, Coast, Tanks	gal.	.40	Nom.	Nom.	.40
.009	.09⅛	.09	.09⅛	Horse, bbls	lb.	.09⅛	Nom.	Nom.	.09⅛
.13	.16⅛	.14⅞	.15⅛	Lard Oil, edible, prime	lb.	.....	.15⅛	.15⅛	.15⅛
.....	.13⅜	.10⅛	.12	Extra, bbls	lb.	.....	.12⅜	.13	.12⅜
.09	.12⅛	.10⅛	.11⅛	Extra No. 1, bbls	lb.	.....	.11⅜	.12⅛	.11⅛
.09⅛	.13⅜	.12⅛	.13⅛	Off prime, bbls	lb.	.....	.13⅜	.13⅜	.13⅜
.078	.11 4/5	.10 2/5	.11	Linseed, Raw, five bbl lots	lb.	.....	10.2	10.4	10.0
.077	.11 9-10	.09 6-10	.10⅛	Bbls c-l spot	lb.	.....	9.8	10.0	9.6
.076	.10⅛	.09	.09 7-12	Tanks	lb.	.....	9.0	9.2	8.8
.....	.09⅜	.09⅛	.09⅛	Lumbang, Coast	lb.	.....	.09⅜	.09⅛	.09⅜
.33⅛	.47⅛	.44	.46⅜	Menhaden Tanks, Baltimore	gal.	.....	Nom.	.46	.46
.....	.90	.10	.36⅜	Blown, bbls NY	lb.	.....	.09	.09	.09
.43	.70	.67	.68⅛	Extra, bleached, bbls NY	gal.	.67	.68	.68	.67
.39	.66	.63	.62	Light, pressed, bbls NY	gal.	.63	.64	.64	.63
.37	.66	.69	.67⅛	Yellow, pressed, bbls NY	gal.	.66	.67	.67	.66
				Mineral Oil, white, 50 gal bbls	gal.	.40	.60	.60	.40
				Russian, gal	gal.	.95	1.00	1.00	.95
.14	.18⅛	.14⅛	.17⅛	Neatsfoot, CT, 20° bbls NY	lb.	.....	.18⅛	.18⅛	.18⅛
.....	.13⅛	.10⅛	.12	Extra, bbls NY	lb.	.....	.12	.12⅛	.12
.....	.16⅛	.12⅛	.14⅛	Pure, bbls NY	lb.	.....	.15⅛	.16⅛	.15⅛
.08	.18⅛	.10	.13⅛	Oleo, No. 1, bbls NY	lb.	.14⅛	.14⅛	.17⅛	.14⅛
.07⅛	.17	.08⅛	.12	No. 2, bbls NY	lb.	.12⅞	.13	.15⅛	.12⅞
.07⅛	.14	.08⅛	.10⅛	No. 3, bbls NY	lb.	.11⅞	.12	.14	.11⅞
.83	1.75	1.40	1.48⅛	Olive, denatured, bbls NY	gal.	1.25	1.30	1.30	1.20
1918	2.00	2.45	2.15	Edible, bbls NY	gal.	1.90	2.00	2.00	1.90
.07⅛	.10⅛	.08⅛	.09⅛	Foots, bbls NY	lb.	.09⅞	.10	.10	.09⅛
.08⅛	.09⅛	.09	.09⅛	Palm, Kernel, Casks	lb.	.....	.09⅛	.09⅛	.09⅛
.07	.08⅛	.07⅛	.08	Lagos, 1500 lb casks	lb.	.07⅛	.08	.08⅛	.07⅛
.....	.08⅛	.07⅛	.07⅛	Niger, Casks	lb.	.07	.07⅛	.07⅛	.07
.....	.14⅛	.12	.12	Peanut, crude, bbls NY	lb.	.12	.12⅛	.12⅛	.12
.....	.15⅛	.14⅛	.15	Refined, bbls NY	lb.	.14⅛	.15	.15	.14⅛
.....	.16⅛	.12⅛	.14	Perilla, bbls NY	lb.	.13	.13⅛	.13⅛	.13
.....	.14⅛	.10	.12	Tanks, Coast	lb.	.10⅛	.10⅛	.11	.10⅛
.....	1.70	1.70	1.70	Poppyseed, bbls NY	gal.	1.70	1.75	1.75	1.70
.63	1.05	1.00	1.01	Rapeseed, blown, bbls NY	gal.	1.04	1.06	1.06	1.01
.....	.90	.82	.87	English, bbls NY	gal.	.....	Nom.	.88	.87
.....	.85	.76	.80⅝	Japanese, bbls NY	gal.	.....	.87	.87	.82
.06⅛	.10	.09	.09	Red, Distilled, bbls	lb.	.09⅛	.10	.10	.09⅛
.....	.09⅛	.08⅛	.08⅜	Tanks	lb.	.....	.09	.09⅛	.09
.....	.50	.50	.50	Salmon, Coast, 8000 gal tks	gal.	.50	Nom.	Nom.	.50
.....	.47	.43	.45	Sardine, Pacific Coast tks	gal.	.....	.45	.45	.45
.08⅛	.13	.11⅛	.12⅛	Sesame, edible, yellow, bbls	lb.	.12⅛	.13	.13⅛	.12⅛
.....	.14	.14	.14	White, bbls	lb.	.....	Nom.	.15	.14
.34	.40	.40	.40	Sod, bbls NY	gal.	.....	.40	.40	.40⅛
.....	.09⅜	.09⅛	.09⅜	Soy Bean, crude					
.06⅛	.....	.....	.....	Pacific Coast, tanks	lb.	.....	.09⅜	.09⅜	.90
.....	.12⅛	.10⅜	.12	Soy Bean, crude, bbls NY	lb.	.12	.12⅛	.12⅛	.12
.....	.11	.10⅛	.10⅛	Tanks NY	lb.	.....	10⅛	.10⅛	.10⅛
.....	.13	.12	.13	Refined, bbls NY	lb.	.....	.13⅛	.13⅛	.13⅛
.70	.85	.84	.84⅛	Sperm, 38° CT, bleached, bbls NY	gal.	.84	.85	.85	.84
.68	.82	.79	.80⅛	45° CT, bleached, bbls NY	gal.	.79	.80	.80	.79
1916	.13⅛	.11⅛	.12	Stearic Acid, double pressed dist bags	lb.	.11⅛	.12	.12	.11⅛
1916	.14	.11⅛	.12	Double pressed saponified bags	lb.	.11⅜	.12⅛	.12⅛	.11⅜
1916	.15⅛	.13⅛	.14	Triple, pressed dist bags	lb.	.13⅛	.14	.14	.13⅛
.07¾	.13	.08⅜	.11	Stearine, Oleo, bbls	lb.	.09⅛	.09⅛	.10⅛	.09⅜
.06	.09	.07⅛	.08	Tallow, City, extra loose	lb.	.....	.08⅛	.09⅛	.08⅛
.07	.11	.08⅛	.10	Edible, tierces	lb.	.....	.10	.10⅛	.10
.09	.10⅛	.08⅛	.10	Tallow Oil, Bbls, c-l NY	lb.	.....	.11⅛	.11⅛	.11⅛
.09⅛	.12⅛	.10	.11	Acidless, tanks NY	lb.	.....	.10⅛	.10⅛	.10⅛
.....	.08⅛	.07⅛	.07⅛	Vegetable, Coast mats	lb.	.08	Nom.	Nom.	.08
.04⅛	.11	.11	.11	Turkey Red, single bbls	lb.	.11	.12	.12	.11
.05⅛	.14	.14	.14	Double, bbls	lb.	.14	.16	.16	.14
.50	.78	.78	.78	Whale, bleached winter, bbls NY	gal.	.78	.80	.80	.78
.52	.80	.80	.80	Extra, bleached, bbls NY	gal.	.80	.82	.82	.80
.48	.76	.76	.76	Nat, winter, bbls NY	gal.	.76	.78	.78	.76

Cellulose Acetate

Stability - Low Acidity
Clarity - Uniformity

"Celanese Brand" Moulding Powder

(*Non-Inflammable*)

Acetic Anhydride (90/95%)

Anhydrous Sodium Acetate

As agents for James Miller Son & Co., Ltd., Glasgow

Cresylic Acid (Pale 97/99%)

Pyridine

Spot or Contract

American - British Chemical Supplies,

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15 East 26th Street **New York, N. Y.**

Associated Companies

Chas. Tennant & Co., Ltd. *Glasgow-Belfast-Dublin*

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Largest Producers
in the
United States

ACETANILID

U. S. P.

Powdered *Crystal*

Not a by-product, but manufactured
from the highest quality Aniline
Oil and Acetic Acid
available in the
market

New York Quinine and Chemical Works
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Local Reports *from our Correspondents at the Principal Consuming Centers of Industrial Chemicals*

California

THE BRAUN CORPORATION
Los Angeles **Calif.**
Chemicals for all Industries
QUICKSILVER
CYANIDE
BORAX
ACIDS & ALKALIES

Illinois

CLARENCE MORGAN & CO.
INDUSTRIAL CHEMICALS
355 W. Ontario Street,
CHICAGO
Phone Superior 8870

DEPENDABLE SERVICE
Benner Chemical Company
203 South La Salle Street, Chicago, Ill.
Soda Ash, Caustic Soda, Neutral Soda, Washing Soda, Cleaner and Cleanser, Bicarbonate of Soda, Tri Sodium, Phosphate, Oxalic Acid
Address All Communications to Main Office

SERVICE QUALITY MERCO
STANDARD CHEMICALS FOR ALL PURPOSES
MERCHANTS CHEMICAL CO., Inc.
1300-16 S. Canal St., Chicago, Ill.
Branch Offices and Warehouses
MILWAUKEE MINNEAPOLIS
Sales Agents For
MICHIGAN ALKALI CO.
"WYANDOTTE" PRODUCTS

CHICAGO

Chemical trade conditions in the Chicago territory have been fair since the last report. While there have not been any outstanding items of activity the movement of the entire line of heavy chemicals has been good. From the price change angle nothing has shown any development worthy of comment. Collections are good.

BOSTON

General business conditions in the territory around Boston are good. This condition is also true of chemical business, but though sales are of good volume there have not any articles in which there is an outstanding movement. Prices are also quite stable and no advance or declines are reported for the month. Collections are good.

DETROIT

General business conditions in the Detroit territory have shown considerable signs of improvement during the past month. Based on the picking up in the volume of automobile business here all the other industries which supply the former have picked up in a corresponding manner There have not been any outstanding movements of chemical items since the last report, nor have there been any price movements worthy of comment. Collections continue very good.

KANSAS CITY

There is a lethargy quite evidently prevailing in business conditions in this territory, and everyone is more or less marking time and waiting for conditions to evidence themselves in a more definite manner. Small lot orders are frequent, and fairly active but there is a general feeling that business is in a slump, considerable unemployment is in evidence, and therefore conditions are not as active as was normally expected but there is confident hope that this is simply a temporary condition, and the basic business factors look favorable, as far as this territory is concerned.

There is a great deal of competitive conditions prevailing in the chemical industry, with inside quotations on items that are being made that are more or less considered to be on a stabilized basis, and there is an eagerness for orders which leads many to expect a decline in a number of the items that have been steady for sometime past.

Glycerine has apparently declined to a basis where reaction upward would not be

Massachusetts

Rogers & McClellan
New England Agents
Seaboard Chemical Co.
Denatured Alcohol Wood Alcohol
Methyl Acetone
Franco-American Chemical Wks.
Amyl Acetate Pyroxylin Solutions
Atlantic Carbonic Co.
Glauber Salts Bisulphite Soda
Penn Chemical Works
Lye
Battelle & Renwick
Sulphur Saltpetre

DOE & INGALLS, INC.
196 MILK STREET
BOSTON
Hancock 8540
PYROXYLIN
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CEMENTS
Waterproofing
HOWE & FRENCH
Established 1834
99 Broad St., Boston, Mass.

Michigan

ACIDS
CHEMICALS
DYESTUFFS
for all industrial purposes
Eaton-Clark Company
Est. 1838
204 Woodward Ave.,
DETROIT, MICH.
Branch: Windsor, Ont.

Missouri

THOMPSON-HAYWARD CHEMICAL CO.
Kansas City St. Louis
Des Moines, Iowa Houston, Tex.
CHEMICALS, OILS & DRUGS
Manufacturers Sales Representatives to the Jobbing and Manufacturing Trade
Warehouse Stocks in
The Middle West and Southwest

Local Reports

from our Correspondents at the Principal Consuming Centers of Industrial Chemicals

Missouri---(cont.)

G. S. ROBINS & CO.
"Chemicals With Service"
310-316 S. Commercial Street,
ST. LOUIS
Br. Off:—1408 Sanger Avenue
DALLAS, TEX.
CHEMISTS
Distributing Chemicals to the Industrial and Jobbing Trades
MATHIESON
Liquid Chlorine-Caustic Soda-Soda Ash
Bleaching Powder-Anhydrous Ammonia
Modified Virginia Soda-Bicarbonate of Soda

New Jersey

MINERAL ACIDS
INDUSTRIAL CHEMICALS
ALCOHOLS - SOLVENTS
AMERICAN
OIL & SUPPLY CO.,
238 Wilson Ave., Newark, N. J.
289 N. Willow St., Trenton, N. J.

New York

Western New York Headquarters for
CHEMICALS and
RAW MATERIALS
ROLLS CHEMICAL COMPANY
Ellicott Sq. Bldg., Buffalo

DANITRA BRAND
Double Refined
SALTPETRE and
NITRATE OF SODA
U. S. P.
Manufactured by
DAVIES NITRATE CO., INC.
57-59 Commerce St., Brooklyn, N. Y.

unexpected. The insecticide market is still badly disturbed, with prices being quoted at extremely low levels, and there is a slight indication that a buyer's market is in prospect. Alcohol seems to be maintained at the schedule of prices with little cutting in evidence.

Collections are fair.

ST. LOUIS

The unemployment situation is reflected in the poor business condition. Although February showed a slight increase over the previous month, it still was not very satisfactory. The buyers' market obtains with prices generally easy and weak. The metal markets shows further declines, tin oxide dropping to 58c a pound and lead oxides dropping ½c. Inquiries for agricultural chemicals continue to come in, but shipments have not yet started in any volume.

CLEVELAND

General business in the Cleveland district has shown some increase since the first of the year. The steel industry has picked up materially due mainly to the increase in automobile production.

Most of the paint and varnish manufacturers report business running along in good shape. Several of them are working over time. A tendency to buy in small quantities is prevalent and stocks are accordingly low.

Unemployment is on the decrease. There seems to be a tone of optimism everywhere.

PHILADELPHIA

Conditions in the chemical industry in Philadelphia have been quite satisfactory since the first of the year. While there has not been any real outstanding feature of the market, business on a whole is fairly satisfactory. Of course, it could be better, but if it maintains its present condition, the trade in general, we believe, will be satisfied. There are some items that are really more active than others, which includes naphthaline, this being a seasonable article and the demand is just coming on. The amounts booked by the consumers for their requirements are large and as the production this year has been reduced considerably by the manufacturers, we do not believe that there will be any surplus material to speak of. Castor oil is in good demand, while such items as alcohol and glycerin are unusually slow, but as stated above, the trade seems to be satisfied with what is going on, providing it will stay that way. Collections are fairly satisfactory.

Ohio

COLORS
LACQUER SOLVENTS
TOLUOL BENZOL
ALCOHOL GLYCERINE
Henry L. Grund Co.
Bulkley Bldg.
CLEVELAND, OHIO

OILS
HYDROXY TEXTILE
SULPHONATED CASTOR
50 and 75%
All Sulphonated Oils and Finishing Compounds
AMMONIA ACETIC ACID
FORMALDEHYDE
Kali Manufacturing Co.
1409 No. Hope St.
PHILADELPHIA, PA.

Naphthalene Epsom Salts
We carry warehouse stocks of domestic and imported industrial chemicals
LABORATORY SERVICE
Inquiries and Orders Solicited
Alex C. Fergusson Co.
23 S. Orianna St.
PHILADELPHIA
Since 1855
Chemicals, Glycerin, Blanc Fixe

Rhode Island

GEORGE
MANN
& CO., INC.
Providence, Rhode Island
SODA ASH
CAUSTIC SODA
SODIUM SULFIDE
CALCIUM CHLORIDE
AMMONIA
STEARIC ACID

The Cleveland-Cliffs Iron Company

Iron Acetate
Hardwood Pitch
Creosote Oil
Acetic Acid
Refined Soap Oil
Wood Preservative
Ore for Red Oxide

The Cleveland-Cliffs Iron Company
1460 Union Trust Bldg. Cleveland, O.

Oxalic Acid

MANUFACTURED BY
OLDBURY - ELECTRO CHEMICAL CO. NIAGARA FALLS, N. Y.

Persulphate Ammonia

MANUFACTURED BY
NORTH AMERICAN CHEMICAL CO., BAY CITY, MICH.

JOSEPH TURNER & CO.

19 Cedar St. -:- New York

Chemical Imports and Exports

February Imports at New York

ACETYL CELLULOSE—10 casks.
ACIDS—
BORACIC—148,148 lbs.
CITRIC—8,767 lbs.
CRESYLIC—17,527 lbs., 126 drums and 523 casks.
CHROMIC—409 lbs.
FORMIC—31,749 lbs. and 247 carboys.
HYDROFLUOSILIC—30 balloons
OXALIC—12,386 lbs.
PHOSPHORIC—50 casks.
PUTTY—87,813 lbs.
SLUDGE—2,838 lbs.
STEARIC—112 bbls. and 50 bags.
TARTARIC—176,507 lbs. and 106 casks.
ALCOHOL—
AMYL—1,650 lbs.
BUTYL—12,753 lbs.
DENATURED—210 drums.
ALKALI MINERAL EARTH—14,080 lbs.
ALUMINA—
HYDRATE—15,280 lbs.
HYDROXIDE—7,392 lbs.
AMMONIUM—
BICARBONATE—61,464 lbs.
CARBONATE—11,500 lbs., 30 casks and 2 cases.
CHLORIDE—189,447 lbs. and 93 casks
NITRATE—373,327 lbs. and 20 casks.
PHOSPHATE—4,233 lbs. and 546 casks.
SULFATE—2,146,320 lbs.
SULFITE—1 pot.
ANTIMONY—
CRUDE—200 casks.
OXIDE—50 casks.
REGULAS—467,936 lbs., 100 casks and 7,350 cases.
SULFIDE—68,820 lbs.
ARGOLS—103,614 lbs.
ARSENIC—27,320 lbs., 204 bbls. and 20 drums.
BARIUM—
CHLORIDE—66,660 lbs. and 99 casks.
NITRATE—106,913 lbs. and 208 casks.
SULFATE—12,148 lbs.

HEIDE AND CO., INC.

Licensed Custom House Brokers and Steamship Agents

WILMINGTON, N. C.

Forwarding Agents
Samples
Sworn Weighers

BARYTES—34,000 lbs. and 1,150 bags.
BITTER SALT—666 casks.
BLANC FIXE—43 casks.
BRONZE, POWDERED—13,268 lbs.
BONE—Flour—458,626 lbs.
MEAL—446,328 lbs. and 7,285 bags.
BUTYL—Acetate—582,897 lbs.
LACTATE—1,165 lbs.
BUTYLAMINE—2,613 lbs.
BUTYRIC ALDEHYDE—9,562 lbs.
CALCIUM—
CHLORIDE—12 drums.
METAL—1,001 lbs.
NITRATE—130,240 lbs. ane 51 casks.
PHOSPHATE—1 bag.
TARTRATE—692,367 lbs. and 252 bags.
CAMPHOR—500 cases.
CRUDE—5,050 cases and 5,786 lbs.
SYNTHETIC—171,028 lbs.
CARBON POWDERED—8,313 lbs., 10 casks and 440 bags.
CARBON and COPPER POWDER—1634 lbs.
CASEIN—191,485 lbs. and 8,477 bags
CASTOR MEAL—909,700 lbs.
CAUSTIC SODA—6 drums and 96 cases.
CELLULOSE—
ACETATE—3 cases.
COMPOUND—12,282 lbs.
ESTER—3,256 lbs.
CHALK—2,871,726 lbs., 4,950 bags, 215 bbls., 2 cases and 25 casks.
CHEMICALS—615,922 lbs., 237 cases, 587 drums, 1,930 bags, 164 bbls., 552 pkgs., 1,161 casks and 50 jugs.
CHEMICAL MANURE—30 bags.
CHROME—
ALUM—12,964 lbs.
OXIDE—113 lbs.
CLAY—196,284 lbs., 548 tons, 3,461 bags, 34 casks.
COAL TAR DISTILLATE—148 drums.
COBALT METAL—3,532 lbs.
COLORS—5,957 lbs., 217 casks, 21 bbls. and 5 cases.
ALIZARIN—20,897 lbs., 203 casks, 40 cases and 24 jugs.
ANILINE—1,246 lbs., 70 drums, 30 bbls., 252 casks, 40 cases 24 jugs, and 162 pkgs.
BLUE—1 cask.
BRONZE—34,385 lbs., and 1 case.
COAL TAR—3,328 lbs., 561 casks, 15 jugs and 11 cases.
DRY—1,324 lbs and 2 cases.
EARTH—50,550 lbs., 133 casks, 70 bbls., and 34 cases.
ENAMEL—1 drum.
VEGETABLE—2,996 lbs., 2 and cases.
CREOSOTE—2,495 lbs.
CRESOL—1 keg and 1 can.
CRYOLITE—22,210 lbs.
CUDBEAR—1 cask.
CUPROUS OXIDE—20 drums.
DEXTRIN—500 bags.
DIBUTYLAMINE—25 lbs.
DIETHYL SULFATE—2,792 lbs.
DIVI-DIVI—500 bags.
EARTH—20 bbls. and 50 casks.
INFUSORIAL—3,722 lbs.
MINERAL—52 cases.
RED—64 casks, 50 bbls., and 320 bags.
SIENNA—28,620 lbs.
YELLOW—12 bbls.
EGG ALBUMEN—10,975 lbs., and 234 cases.
YOLK—320 cases.
EPSOM SALT—320 casks, 300 bags and 240 kegs.
EXTRACTS—
ALGARROBE—5 cases.
LOGWOOD—100 cases.
PINE BARK—178 sacks.
QUEBRACHO—215,963 lbs. and 45,-734 bags.
FERRIC OXIDE—12,100 lbs.
FERRO—
CHROME—242 casks.
MANGANESE—243 casks.
SILICON—24,237 lbs.
FERTILIZER—887,992 lbs. and 2,328 bags.
FLOUR—
BONE—223,157 lbs.
POTATO—220,000 lbs.
FLUORSPAR—36,300 lbs.
GALLINOL—124 cases.
GAMBIER—954 cases and 75 bags.
GELATIN—2,523 lbs., 441 cases, 61 bbls. and 54 kegs.
GLAUBER'S SALT—178,855 lbs. and 225 casks.
GLUE—170,130 lbs., 2,065 bags, 229 pkgs. 28 casks, 20 drums, 90 tins, 2 cases and 105 bbls.
STOCK—261,344 lbs.
GLYCERIN — 293,419 lbs., 145 drums and 1 case.
GRAPHITE—380,345 lbs. and 1,267 bags.
GREEN OXIDE—16 casks.
GUANO—992 bags.
GUM—5,786 lbs., 91 bbls. and 50 cases.
BENZOIN—180 lbs.
BLACK—696 lbs.
COPAL—575,717 lbs., 3,245 bags, 189 baskets and 12 cases.
DAMAR—32,727 lbs., 2,049 bags and 1,550 cases.
DUST—33,561 lbs. and 150 bags.
ELEMI—250 cases.
KAURI—560 cases and 750 sacks.
LAKOE—80 bags and 20 cases.
PERILLO—468 bbls.
SHIRAZ—18,269 lbs. and 141 casks.
INDIGO—21 casks.
INTERMEDIATES—32,598 lbs.
IODINE—Crude—8,622 lbs. and 108 kegs

IRON—
CHLORIDE—73,185 lbs. and 90 casks.
OXIDE—10,500 lbs., 305 casks and 22 kegs.
ISINGLASS—1 case.
KAOLIN—11 bbls.
LAMP BLACK—22,099 lbs.
LEUNA SALTPETER—698,720 lbs.
LIME—43,193 lbs.
CHLORINATED—75 cases.
LIMESTONE—555,000 lbs. and 2,000 bags.
LITHOPONE—2,025 casks.
MAGNESIA—
CARBONATE—181 cases.
CALCINED—16,900 lbs and 20 cases.
CHLORIDE—338,367 lbs. and 572 lbs.
PEROXIDE—367 lbs.
MAGNESITE—204 bbls.
MANGANESE ORE—212,642 lbs. and 53 casks.
MANGROVE BARK—1,353 tons.
MANNITE—1,100 lbs.
MANURE SALT—226,877 lbs.
MENTHOL—6,900 lbs.
SYNTHETIC—1,792 lbs.
MERCURY—31,046 lbs. and 383 flasks.
METHANOL—617,544 lbs.
MYROBALANS—17,150 packets.
NAPHTHALENE—286,748 lbs. and 629 bags.
NICKEL—576 cases and 500 casks.
NICKEL and COPPER CARBONATE—1 cask.
SULFATE—120 casks.
NITRATE POTASH—115,443 lbs.
NITROGENOUS MATERIAL—785,840 lbs.
NITROPHOSKA—419,540 lbs.
OCHRE—216,485 lbs., 41 casks and 400 bags.
OSSEINE—88,396 lbs.
PARALDEHYDE—20 cases.
PARATOLUENE SULFONANILIDE—1,232 lbs.
PHENYLDIMETHYL—25 casks.
PHOSPHATE—
TRIPHENYL—5 drums.
PHOSPHOROUS—
AMORPHOUS—3,280 lbs.
SESQUISULFIDE—18,671 lbs.
TRICHLORIDE—12,283 lbs.
PLASTANOLL—922 lbs.
PLUMBAGO—3,022 bags and 196 bbls.
POTASH—48,792 lbs. and 131 casks.
CAUSTIC—476,399 lbs. and 269 casks.
POTASSIUM—
CARBONATE—168,802 lbs. and 81 casks.
CHLORATE—422,389 lbs., 1,634 casks.
CHLORIDE—401,190 lbs., and 2,950 bags.
CYANATE—128 lbs.
MAGNESIA SULFATE—200,948 lbs.
NITRATE—427,479 lbs., 865 bags and 720 casks.
PERCHLORATE—59,822 lbs.
PERMANGANATE—12,320 lbs.
PRUSSIATE—4,785 lbs.
SALTS—30 casks.
PROTECTOL—11,715 lbs.
PUMICE—1,679,599 lbs. and 145 cases.
QUEBRACHO—22,136 lbs.
RED OXIDE—38,500 lbs.
RESIN—49,247 lbs. and 5 cases.
ROSIN—107 lbs. and 10 bbls.
ROCHELLE SALT—24,309 lbs.
SEEDLAC—1,718 bags, 70 chests and 50 cases.
SHELLAC—1,173,347 lbs., 3,796 bags, 75 chests and 2,756 cases.
SIDERITE—33 tons.
SILICO MANGANESE—48,013 lbs.
SODIUM—
ARSENATE—1 case.
BISULFITE—116,600 lbs.
CHLORATE—85,470 lbs.
CHLORIDE—280 sacks.
CYANIDE—1,000 cases, 25 drums and 505 casks.
CYANURE—970 cases.
PERSULFITE—116,600 lbs.
PHOSPHATE—486,729 lbs. and 1,245 casks.
PRUSSIATE—142 casks.
NITRATE—6,751,118 lbs. and 10,313 bags.
SILICO FLUORIDE—16,276 lbs., 125 casks and 610 bbls.
SULFATE—445,270 lbs. and 90 casks.
SULFIDE—50,933 lbs. and 104 drums.
SULFITE—3,0830 lbs.
URANATE—101 bbls.
SOLVENT "L"—735 lbs.
SPAR—
HEAVY—33,000 lbs.
STARCH—
POTATO—1,071 bags and 25,587 lbs.
STEARINE—20,700 lbs.
STRONTIUM NITRATE—50 casks.
SULFIDE ORE—54,714 lbs.
SULFUR—45,634 lbs. and 5 casks.
SUMAC—323 bags and 282,271 lbs.
SUPERPHOSPHATE—7 casks.
TALC—1,739,578 lbs. and 2,220 bags.
TAPIOCA—
FLAKE—104,001 lbs.
FLOUR—3,544,667 lbs. and 6,820 bags
PEARL—218,817 lbs. and 173 bags.
TARTAR—68,009 lbs. and 18 casks.
MATERIAL—41,100 lbs.
TERPYNYLACETATE—3 drums.
THALIUM SULFATE—253 lbs.
THEOBROMINE—2 bbls. and 1 keg.
TITANIUM POTASSIUM OXALATE—50 casks.
TOLUENE SULFONANIDE—2,239 lbs.
TRIPHENYL PHOSPHATE—5,595.
TUNGSTENORE—560 bags.
TURPENTINE—3 drums.
UMBER—135 bags and 10 casks.
UREA—65,333 lbs.
CALCIUM NITRATE—19,976 lbs.
VALONIA—6,219 bags.
VULKACIT—3 cases.
WAX—
MINERAL—9,236 lbs.
MONTAN—236,250 lbs.
WHITING—408,875 lbs., 2,900 bags and 50 casks.
WOOL GREASE—350 bbls.
YELLOW OXIDE—15 casks.
ZINC—
CHLORIDE—21 casks and 42 bbls.
OXIDE—77,040 lbs., 197 bbls. and 50 casks.
SULFATE—11,924 lbs.
SULFIDE—2 casks.
ZYKLON—370 cases.

Recent Exports at New York

ACETATE—4,725 lbs.
ACETONE—137,896 lbs., 336 drums and 1 case.
ACID—
ACETIC—350 drums, 42 bbls. and 4 cases.
BORIC—2,959 lbs., 20 bbls., 4 kegs and 1 case.
CARBOLIC—1 case.
CITRIC—8 cases.
CONCENTRATE—360 lbs.
HYDROCHLORIC—37,120 lbs., 267 carboys and 21 cases.
N. & W.—1234 lbs.
NITRIC—17 carboys and 4 bbls.
OXALIC—2 bbls.
PHOSPHATE—1,652 lbs.
PHOSPHORIC—16 cbys and 24 pkgs.
PICRIC—22 lbs.
PYROGALLIC—20 cases.
STEARIC—11 boxes.
SULFURIC—150 drums, 13,932 lbs., 20 cases and 132 carboys.
TARTARIC—18 casks, 15 drums, 7 kegs and 1 case.
TANNIC—4 bbls.
ALCOHOL—34,658 lbs., 1 drum and 1 case.
ALUM—8,395 lbs.
CHOME—3,139 lbs.
ALUMINUM—
HYDRATE—1 bbl.
OXIDE—6 bbls.
SULFATE—2,500 bags and 4,807 lbs.
AMMONIA—
ANHYDROUS—56,057 lbs.
AQUA—1,555 lbs. and 14 cyls.
CARBONATE—2 cases and 1 carboy.
PHOSPHATE—7,530,437 lbs.
SULFATE—479,517 lbs., 2,510 bags and 40 kegs.
ANILINE—3,519 lbs., 24 kegs and 2 cases.
ANTIMONY SULFATE—4 kegs.
BARIUM CHLORIDE—3 casks and 13 lbs.

HENRY NANNINGA COMPANY

Steamship Agents

SAVANNAH, GEORGIA

Steamship Service from South Atlantic ports to U. K. and the Continent, also to the Mediterranean.

BENZOL—4,571 lbs.
BONE BLACK—10 cases.
BORAX—4,610 lbs., 2 kegs and 1 drum.
BLUE—4 kegs and 3 cases.
BUTANOL—43 drums.
BUTYL ACETATE—17 drums.
CADMIUM-METAL—2,333 lbs.
SULFATE—8,149 lbs.
CALCITE—525 cases.
CALCIUM—
ARSENATE—8,927 lbs., 4 drums, and 2 cartons.
CARBIDE—247,367 lbs., and 5,217 drums.
CARBONATE—327 lbs. and 407 drums.
CHLORIDE—25 drums and 6 cases.
MAGNESIDE—178 lbs.
CARBON—30 cases.
BISULFATE—2,352 lbs.
BLACK—74,784 lbs. and 6 cases.
DIOXIDE—49 cyls.
DISULFIDE—2,637 lbs.
CAUSTIC SODA—262,005 lbs., 606 drs. and 7 cases.
CHALK—20 bags and 11 bbls.
CHEMICALS—12,894 lbs., 60 bbls., 53 cases and 3 drums.
CHLORINE—11,646 lbs. and 5 cyls.
CHLOROFORM—1 case.
CHROMIUM—SULFATE 3,491 lbs. and 6 bbls.
COAL-TAR DISINFECTANTS— 1,803 lbs., 49 drums and 15 bbls.
COLORS—2,822 lbs., 25 packages, 45 kegs and 10 bbls.
COPPER SULFATE—266,134 lbs. and 271 kegs.
CREAM OF TARTAR—24 kegs.
CREOSOTE—3 bbls.
CRESOLENE—11,800 lbs.
CYANIDE—1,080 lbs., 2,170 drums and 520 bags.
CYANOGEN—160 drums.
CYANO GAS—53 cases and 17 drums.

J. T. STEEB & CO., INC.

Shipping and Custom House Brokers Forwarding Agents

Free and Bonded Warehouse
Marine Insurance

TACOMA Tacoma Bldg. **PORTLAND** Wilcox Bldg.

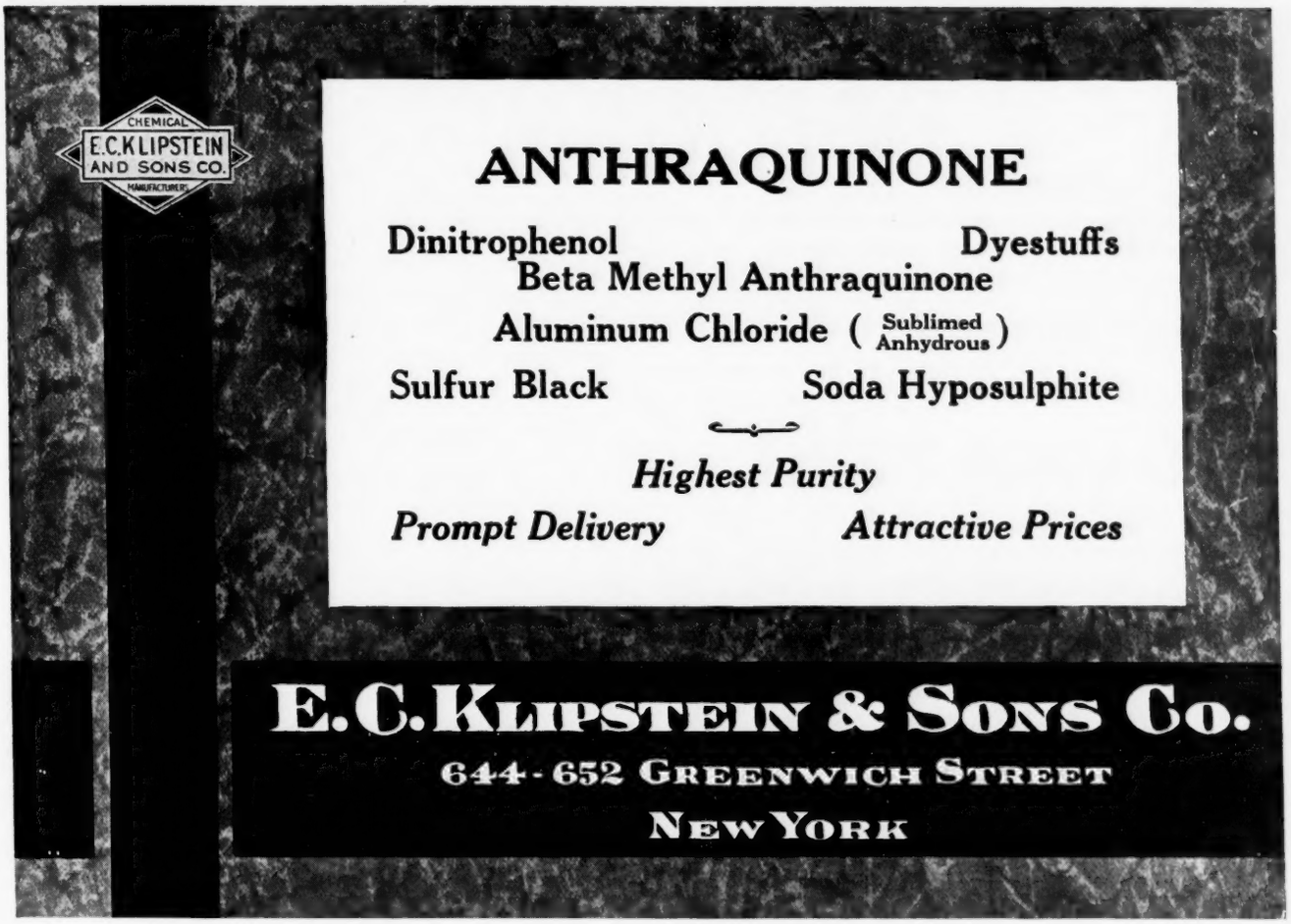
SEATTLE Douglas Building

DEXTRIN—5,653 lbs.
DISINFECTANT—50 drums, 14,994 lbs., 73 cases, 20 kegs and 5 bbls.
DYESTUFFS—753 drums, 2,663 lbs., 28 bbls, 646 kegs and 10 cases.
DIOXOGEN—6 cases.
EPSOM SALT—1,231 lbs. and 2 kegs.
ETHYL ACETATE—4 drums.
EXTINGUISHER CHEMICALS—2 cs.
EXTRACTS—
DYEWOOD—3 bbls.
LOGWOOD—9 cases.
QUEBRACHO—1,100 bags.
TANNING—116,283 lbs., 110 bags, 74 cases, 15 pkgs., 179 bbls., and 10 casks.
FERRO—
CHROME—2,383 lbs.
SILICON—1,091 lbs.
FERTILIZER—46,730 lbs.
FORMALDEHYDE—247,312 lbs., 329 bbls., and 7 cases.
GALACTITE—2 cases.
GLAUBER'S SALT—7,339 lbs., 35 bags, 7 cases and 8 kegs.
GLYCERIN—56 lbs., 8 drum and 1 case
GLYCO ESTER—305 lbs.
GLYPHO—20 drums.
GRAPHITE—1,222 lbs.
GUM—
KAURI—298 lbs. and 2 boxes.
OLIBANUM—20 bags.
TRAGACANTH—14,214 lbs. and 2 cases.
HEXAMETHYLENE TETRANINE — 15,305 lbs., and 7 cases.
INFUSORIAL EARTH—14,256 lbs.
INSECTICIDES—149,146 lbs., 17,000 cases, 28 drum, 13 crates and 4 bags.
IODINE—361 lbs.
IRON—
OXIDE—4 boxes.
PERCHLORIDE—4 kegs.
SULFATE—1 keg.
LEAD ARSENATE—6 kegs and 4 drums
LIME—31,462 lbs., 118 drums and 2 cases.
LYE—6 cases and 52 lbs.
MAGNESIUM—
CALCINE—4,545 lbs. and 1 case.
CARBONATE—2,612 lbs., 7 bbls., 8 bags and 2 cases.
OXIDE—74 cases.
SULFATE—81 kegs.
METHANOL—6,340 lbs., 160 lbs. and 10 cases.
METHYL CHLORIDE—2 flasks.
MOLASSES—
BLACKSTRAP—69,942 lbs.
CRUDE—32 drums.
NICKEL OXIDE—180 bbls.
OCHRE—50,300 lbs., and 18 bags.
PHOSPHO-LECITHIN—17 cases.
PHOSPHORIC ORTHO—1 case.
PITCH—30 bbls.
POTASH—9,018 lbs., and 55 bbls.
CAUSTIC—3,124 lbs., 40 drums and 5 cases.
POTASSIUM—
BICHROMATE—2,488 lbs., 6 bbls. and 1 case.
BROMIDE—8,960 lbs. and 30 cases.
CARBONATE—10 kegs.
CHLORATE—290 kegs, 4 bags and 1 case.
CHLORIDE—4,528 lbs.
CHROME ALUM—33 bbls.
IODIDE—1 box.
NITRATE—7 kegs.
SALTS—4 kegs.
XANTHATE—17 drums.
PLUMBAGO—8 bbls.
PUMICE—2 bbls.
ROSIN—27,373 lbs., and 60 bbls.
SALTPETER—12 kegs and 4 bags.
SALTS—10 cases and 225 bags.
SAL SODA—1,120 lbs. and 44 boxes.
SHEEP DIP—40 cases and 374 lbs.
SHELLAC—8 cases.
SILICON CARBIDE—195,573 lbs.
SODA ASH—47,404 lbs., 1,225 bbls., 180 drums, 95 kegs, 35 cases and 4 bags.
SODIUM—
BICARBONATE—89,836 lbs., 134 bbls., 129 kegs and 6 cases.
BISULFITE—4 drums.
CARBONATE—7 cases.
CYANIDE—4 cases and 4,644 lbs.
HYPOSULFITE—1,866 and 2 kegs.
NITRATE—5,048 lbs.
SALTS—10 bbls.
SILICATE—850 bags, 32 drums, and 13,521 lbs.
SULFATE—3 kegs.
SULFUR—3 bags, 22 boxes and 6,721 lbs.
DIOXIDE—2 cyls. and 1 case.
FLOWERS—19 bbls and 5 bags.
TALC—1,027 lbs., 21 cases, 78 bags, 2 kegs, and 1 bbls.
TANNING MATERIALS—5,134 lbs.
TITANIUN OXIDE—34 bbls.
ULTRAMARINE—15 cases, 14 bbls., and 1 case.
ZINC—
DUST—2,585 lbs.
OXIDE—162,998 lbs., 9 kegs, 265 bbls., 242 bags.
STEARATE—462 lbs.
WHITE—1,115 lbs.

Bauxite Trust A. G. (Austria) reaches an agreement with I. G. Farbenindustrie to supply the latter with bauxite. The reason for this agreement, according to the Department of Commerce, is found in the fact that the Farbenindustrie is to use bauxite in the production of phosphoric acid by the Lilienroth-Urban process. It is proposed to mix two tons of bauxite with one ton of crude phosphate and obtain as a by-product a high grade bauxite cement of more economic importance than phosphoric acid.

All tests in this matter have been fully carried out and it is reported that practical use of this invention will be made in the near future. In order to cover the large demand for bauxite by the Farbenindustrie the Bauxite Trust A. G. will greatly extend its plant and to that end will in the near future considerably increase its stock capital.

German-Russian Naphtha Co., subsidiary to the Russian Naphtha Syndicate, has founded a new concern in conjunction with Erdoel-Industrie A. G., subsidiary to the French-Austrian petroleum concern, Gallia-Premier, according to the Department of Commerce. The proposed capital of the new enterprise shall be 10,000,000 marks. It shall be especially organized for the retail distribution of Russian benzine on the German market.



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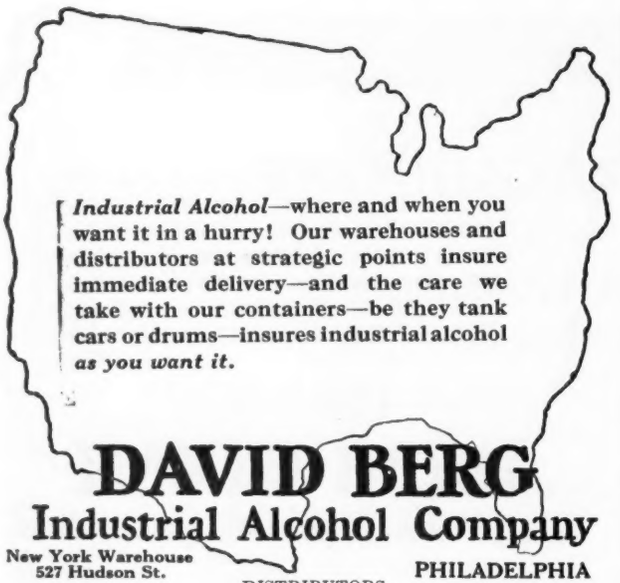

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BUREAU OF ECONOMIC CHEMISTRY
INCORPORATED
180 William Street New York City

Economics of The Fertilizer Industry

(*Continued from page 274*)

strength goods, bringing to the farmers the fact that they could obtain by their use the same or better results with less pounds of fertilizer per acre, their hauling and handling costs would be less, their freight and labor cost would be cut in half. The scientific use, however, of multiple strength goods is educational and can only be brought about by co-operation with the Department of Agriculture, the Agricultural Colleges, the various State Experiment Stations, the aid of agronomists, and the extensive research work done by the companies engaged in the industry who are constantly studying these questions of crop fertilization and soil deficiencies.

Sound economics and good business demand the manufacture of the fewest number of analyses necessary to meet the real needs of the soil and the crop to be grown—that deliveries be made from factories which because of location are the best fitted to serve adjacent territory with the lowest freight cost per ton—that business be done on as near a cash basis as is possible so as to relieve the cost of fertilizer from interest, credit and collection charges, and bad debt losses.

A Code of Trade Practices has been adopted by a very large majority of those interested in the industry. This Code contains sound methods of conduct of business and it would seem that true adherence to these practices would bring about a greatly improved condition in our industry.

Corn Cob Has Great Possibilities

(*Continued from page 292*)

the manufacture of paper pulp. This substance is valuable as a thinner for paints, varnishes and lacquers. It yields also an insoluble resinous compound with excellent insulating properties.

On the basis of experiments made in the bureau, a commercial plant has been started in Minnesota to produce illuminating and motor fuel gas from straw by a process which yields tar and carbon as refuse. Straw is fed into a retort, gas and tar are drawn off and the carbon discharged. In this manner, with wheat, barley, oat and rice straw, the operating company is manufacturing paint and auto-top dressing, roofing materials and disinfectants.

At present most of the gas produced is wasted, although some of it is used in heating the retort after the operation starts. No other industries are near enough to use this waste gas, but its potential value is established.

In view of the fact that from 100 to 250 pounds of straw or other waste is produced for every 100 pounds of grain, the economic importance of the bureau's discoveries is obvious. Special attention is given by the bureau to the value of cellulose, found in all straws and in many other farm-wastes or farm by-products for paper making.

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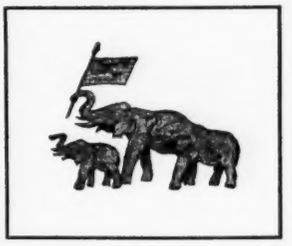

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in Chemical Circles

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As soon as the few last questionaires recently sent to these leaders are returned, this book will go to press. Before printing it is helpful for the publishers, who are D. Van Nostrand Co., to estimate the size of the first edition and so, through the book's editor, who is our Mr. Williams Haynes, we have made arrangements enabling us to make you a special, money-saving offer. After publication the price of "Who's Who" will be $6 a volume net. For orders placed at once the price is $5 and we will include a subscription to Chemical Markets for a year as an additional premium.

You will want to own this book. It will be a valuable and beautiful addition to your library, a book of fascinating interest and real usefulness since on every page will be the business and personal records of friends and associates, competitors and customers. Act at once to take advantage of this pre-publication offer.

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I accept your Special Advance Offer and enclose five dollars; send me "Who's Who" when published and enter (or extend) my subscription to "Chemical Markets" for a year, 12 monthly issues.

Signed.....

Company.....

Position.....

Address.....

Phosphate Rock

(*Continued from page 279*)

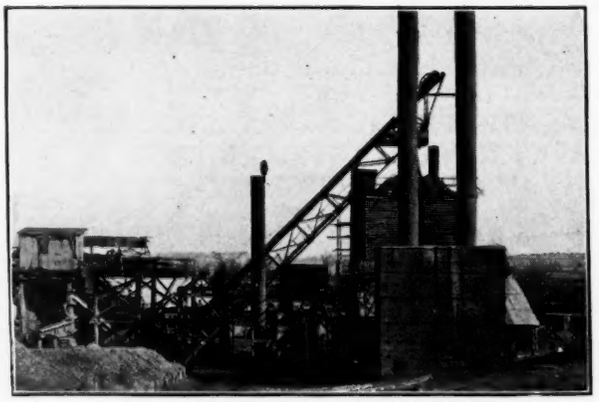
so-called raw material to their competitors, thus losing that once good profit, and in turn suffering from the cut-throat competition of the non-mining manufacturers in their own finished product.

It is significant that in addition to the one mining

Dragline mining outfit on surface of phosphate deposit. The face of the deposit may be seen in center foreground.

company which has steadily continued to produce unacidulated ground phosphate rock since 1897 for direct sale to farmers and the other company that has been active since about 1915, two of the largest of the "big six" have now organized departments for producing and marketing this so called raw material in finely ground form direct to the farmer. This entrance of these factors into that trade may change the intense opposition of the Fertilizer Association to active advocacy, which later will quickly be followed by a cessation of the opposition of state and federal Agricultural Departments and publication and circulation of the vast amount of favorable research so long suppressed on this subject.

With such action taken the ordinary grain, hay and livestock farmer will come more and more into the use of this splendid fertilizer, to his great benefit as well as to the proper utilization of the 140,000,000 tons of Tennessee phosphate suitable for this purpose, leaving the fertilizer industry to supply just as much as ever for the acid phosphate trade and making of the phosphate mining industry the proper activity it should be, with an easily absorbed output of several million tons.



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BUTYRATE
98/100%

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METHYLENE
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What The Chemist Thinks of Wall Street

(*Continued from page 272*)

of Wall Street. None knows better than the chemist the vital necessity for proper financing, adequate distribution of securities and suitable market for them in any business of even moderate magnitude. And Wall Street does all this very well in connection with any standardized business. It is a forced levity that you behold here. We yearn to create a ballyhoo for sulfuric acid too but we don't know how. People are obsessed with the idea of buying no more chemicals than is absolutely necessary for immediate use, and no large billboards or pages in the Saturday Evening Post, or nice young men from the brokers' offices can persuade them to do more. However, indirectly we benefit by everything they buy, whether autos or radios or clothes, magazines, newspapers or facial decorations. Even every stock certificate sold in Wall Street increases the market for chemicals.

Legal Angles of Rayon Fight

British Celanese's patent rights continue to occupy the limelight in rayon circles. Following the announcement by Dreyfus-Clavel group declaring intention to fight any cases of infringement of patents, (CHEMICAL MARKETS, Jan., 1928) the management of British Celanese issued a circular to shareholders amplifying the previous announcement and reiterating the impossibility of other companies contemplating the production of cellulose acetate yarns without infringing patents held by British Celanese. This "sweeping and general claim" has been challenged on all sides in view of the widespread manufacture of this basic material by other well-known companies all over the world. It is thought that the statement presages numerous lawsuits and indicates that competition is becoming acute. Reference was also made, in the circular, to constant improvements in quality of the company's products as well as to progressive production of cost and increase of sales. The statement concluded by saying that the cost of celanese production in the future should be lower than that of any other artificial silk.

Other developments abroad in rayon production have included Establishments Kuhlman's announcement of complete plants for manufacture of both acetate and viscose rayons, Belgium Tubize's increase in capital from 25,200,000, francs to 125,000,000 francs; the formation of Novaseta A. G. of Arborn, Switzerland to manufacture rayon by cellulose acetate and cupra-ammonium processes; and reports from London that Courtaulds are planning new plant in England. Another report from Toronto indicates that the introduction of the manufacture of rayon from pulpwood is under contemplation in New Brunswick.

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Ask Me Another

1—What was the price of Phthalic Anhydride in March 1917 ?
2—What is Quillaja ?
3—Under what commercial grades is Gum Asphaltum commonly sold ?
4—Who are the American agents for Croda, Ltd. of Goole, England and for what product ?
5—Where are the plants of the Grasselli Chemical Co. located ?
6—What are industrial uses of Stannic Acid ?
7—Give the chemical name for Barytes and what is its common trade name ?
8—What is the telephone number of the following branch offices ?
(a) Du Pont, Chemical Division, Newark, N. J.
(b) General Dyestuffs Corp., Chicago.
(c) Solvay Sales Corp., Boston.
9—Can you give the address of five manufacturers of carboys ?
10—What is the duty on Sodium Arsenate ?
11—Who is the secretary and what is the address of the Compressed Gas Manufacturers' Association ?
12—Did the peak price of muriatic acid come during 1916 or 1920 ?
13—In what containers do the Dow Chemical Co. regularly supply Carbon Bisulfide ?
14—What is the boiling point of Amyl Buyterate ?
15—Do Roessler & Hasslacher have a branch office at Charlotte, N. C. at New Orleans, at Cleveland ?

In the new 1928 (Sixth Annual) Edition of

DRUG & CHEMICAL GUIDE BOOK

will be found the correct answers on the following pages:

[1, page 878, 2, p543; 3, p328; 4, p90; 5, p22; 6, p81; 7, p153; 8 (a) p729; (b) p779; (c) p755; 9, p685; 10, p925; 11, p922; 12, p897; 13, p201; 14, p128; 15, p37.]

These questions show vividly how packed with useful commercial information this invaluable, handy book is — what a variety of every day queries it answers — how many purposes it serves.

The new edition is just off the press: with two new features (1) the uses of all chemical and drug products (2) a directory of manufacturers of containers, shipping supplies, packing machinery, etc. Stoutly bound in red buckram cloth; 937 pages; price $1 postage paid delivered.

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Company .....

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Foreign Cartels and American Industry

(*Continued from page 282*)

to any one desiring to buy such commodities for use in manufacturing goods in the United States.

It is quite clear, therefore, that Congress contemplates the enactment of constructive legislation, not only to protect American industry from unwarranted attacks from abroad, but to enable American industry to have a fair opportunity of meeting foreign competition in neutral markets.

Destructive Competition No Benefit

But all statutes and all the aid which governmental departments may give are of no avail unless there is an intelligent conduct of business itself. There are those who believe that the principle of competition means that a premium is placed on drastic and destructive competition; but the law itself has recognized that destructive competition is of no benefit, even to the consumer. Co-operation in industry is not forbidden. It has been pointed out by the Supreme Court that the Sherman Law did not intend to place a penalty upon intelligence in business. A manufacturer is entitled to exercise the business virtues based on a knowledge of actual conditions.

I am informed that your industry is developing a high degree of co-operation. That you have taken advantage of trade associations as a means for solving your problems. It is reported that there are some forty trade associations existing in your industry, and that they have been organized in every branch of the business. The attitude of the courts towards these associations, and the helpfulness of the Department of Commerce in furnishing guidance, ought to serve as an encouragement to proper co-operative effort.

Conduct of Trade Associations

The true course of conduct for trade associations has been laid down by certain decisions of the Supreme Court, and it is clear under those decisions that associations of competitors in any line of commerce which have solely for their purpose the collection and dissemination of statistical information as to existing conditions and past transactions do not violate the anti-trust laws. It is only where the collection and dissemination of information, and its subsequent discussion, leads to agreements as to prices, customers, or allocation of territory that the entire combination falls within the provisions of the Sherman Law. And such conduct is forbidden for the very reason that persons and concerns agreeing to the imposition of arbitrary conditions must always submit themselves to the will of others. That condition finds no favor in the law and should find no favor in the commercial life of this country. It subordinates just ambition, initiative, and energy to immediate monetary profit, with the ultimate effect of hindering the development of those qualities which give life, energy, and success to individual business operations.

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Phenol

Whiting

Chlor Phenols

Benzol

Sulphuryl Chloride

Thionyl Chloride

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Multi-Unit Tank Cars
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99½—100% Pure
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Tartaric Acid
U. S. P.

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GRANULATED

TARTAR CHEMICAL WORKS
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100 East 42nd Street
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Largest Manufacturers in the United States

Economic Aspects of The Fertilizer Future

(*Continued from page 286*)

In addition to the general profitableness of using fertilizers, other important economic advantages often obtained. Certain crops may be brought to maturity earlier. Where garden crops or truck are involved, it means placing the products on the market early when the best prices are available. If the growing season is short, it may insure maturity before frost, and in certain crops, as cotton, it assists in combating insect ravages. Early maturing cotton through the use of fertilizers is one means of reducing the boll weevil damage. Fertilizer produces better quality in crops. In general, the well fed, vigorous crop is of better quality and more resistant to disease attack than a poorly nourished crop. Moreover, certain specific results follow the application of single fertilizer constituents, as for instance, potash used on cotton has an influence in preventing rust, and with fruits the keeping quality may be improved. Such specific applications are too numerous to detail, but find application in producing better crops of higher commercial value.

TABLE 4

Cost of Producing Corn as Related to Cost of Fertilizer Used. Compiled from Data Collected from Farmers of all States*

Yield Groups Bu. per acre	*Yield per acre in bu.*	*Fertilizer cost per acre*	*Total cost per acre*	*Net cost per bu.*	*Value corn per acre*	*Cost fertilizer in % of cost per acre*	*Cost fertilizer in % value per acre*
7 and under	5	$1.67	$16.28	$3.05	$5.13	10.2	32.5
8-17	13	2.26	19.08	1.34	12.47	11.4	20.0
18-27	22	2.66	21.76	.90	19.50	12.4	13.6
28-37	32	3.41	24.98	.70	24.68	13.7	13.8
38-47	41	3.93	27.61	.61	30.07	14.2	12.8
48-57	51	5.32	32.68	.57	37.43	16.3	14.2
58-67	61	6.95	37.11	.54	45.82	18.2	15.2
68-77	72	10.26	44.23	.53	59.69	23.2	17.2
78 and over	88	11.70	48.93	.48	72.30	24.0	16.2

*Data from cost of production statistics, 1923. U. S. Department of Agriculture Yearbook 1924.

TABLE 5

Cost of Producing Wheat as Related to Cost of Fertilizer Used. Compiled from Data Collected from Farmers of all States*

Yield Groups Bu. per acre	*Yield per acre in bu.*	*Fertilizer cost per acre*	*Total cost per acre*	*Net cost per bu.*	*Value wheat per acre*	*Cost fertilizer in % of total cost*	*Cost fertilizer in % of value per acre*
3 and under	2	$0.67	$14.66	$7.00	$2.52	4.6	26.6
4-6	5	1.00	14.26	2.72	5.19	7.0	19.3
7-9	8	1.20	15.59	1.85	7.89	7.7	15.2
10-12	11	1.89	18.31	1.56	11.04	10.0	17.1
13-15	15	2.23	20.80	1.28	14.44	10.7	15.4
16-18	17	2.78	23.42	1.26	17.11	11.8	16.2
19-21	20	3.36	26.12	1.19	19.80	12.9	17.0
22-24	23	3.99	28.76	1.13	22.57	13.9	17.7
25-27	25	4.10	30.74	1.11	24.94	13.4	16.5
28-31	30	3.74	33.33	1.02	29.15	11.2	12.8
31 and over	38	3.52	35.83	.85	34.83	9.8	10.2

*Data from cost of production statistics 1923. U. S. Department of Agriculture Year book, 1924.

Royal regulations governing production and exportation of potash salts in Spain during 1928 are as follows: maximum production of potash salts of 80 per cent. potassium chloride will be 70,000 tons, while minimum production will be 30,000 tons. Maximum swle price in Spain will be 250 pesetas per ton of 80 @ 80 per cent. potassium chloride, while foreign sales price will be one per cent. higher than minimum Spanish price of preceding month.

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Donat Agache Talks On Cartel

(Continued from page 294)

assure itself a legitimate place on the world market. It is in this way that the production of dyestuffs passed from 3,846 tons, with 184 marks, in 1920, to 9,900 tons, with more than 1,100 marks, in 1926.

"This development permitted us not only to meet the national needs, but to take, against German, Swiss, English and American competitors, a notable place upon the exterior market. The recent accord with the Farbenindustrie is a consolidation of the positions acquired by the French industry. The principles it expresses are.

"(1) On the home market, reservation to the home producers.

"(2) On the export markets, respect for the positions attained.

"The accord leaves to each group its full, entire autonomy in the manufacture and sale of their products and the limitation of expenses; instead of being in pursuance of a monopolistic desire to raise prices, the accord seeks to lower them and develop consumption.

"In two new domains, that of nitrogenous fertilizers and synthetic carburants, an accord with the German industry appears to be very useful. In regard to carburants, the Germans have constructed a factory costing 700,000,000 francs ($27,507,861.00) with a capacity of 300,000 tons per year. The experimental laboratory at Oppan cost 100,000,000 francs and employs up to 1,500 chemists."

Japanese imports of drugs and chemicals during 1927 totaled yen 130,000,000. Exports amounted to yen 37,000,000. Principal exports included: glue, valued at yen 520,000, compared with 638,000 in 1926; sulfur, yen 310,210, compared with 346,000; nitric acid, yen 512,000, compared with 560,000; bleaching powder, yen 380,000, compared with 351,000; sulfate of soda, yen 681,000, compared with 696,000. Principal imports included: tanning materials, yen 1,760,000 compared with 1,990,000; shellac 1,667,000, compared with 1,774,000; resin, yen 4,110,000 compared with 4,770,000; crude caustic soda, yen 5,121,000 compared with 5,400,000; soda ash and natural soda, 2,229,000 compared with 2,600,000; and crude nitrate of soda, yen 8,160,000; compared with 8,471,000.

I. G.'s most recent announcement concerning its high pressure contact system for producing synthetic rubber is that it will not be put upon a marketable basis for at least three years. Herr von Weinberg was again the spokesman and this announcement evidently renders null and void previous statements made by him on the same subject (CHEMICAL MARKETS, Dec. 8, 1927 and Jan. 1928).

Treasury Department orders temporary embargo, Feb. 24, against importation of laminated fiber sheets made with phenol resins. This is temporary measure effective until U. S. Tariff Commission makes final decision on application of Bakelite Co. for prohibition of such commodities, claiming infringement of American patents and trade-marks and unfair competition with American products.

United States imports 2,833,600 pounds of rayon of Holland's total export of 14,154,800 pounds for first eleven months of 1927. Germany took 4,292,200 pounds and Great Britain 602,800 pounds during the same period.

Our Dyes Popular In Japan

(*Continued from page 302*)

been temporarily laid aside and this has afforded another splendid chance to American dyes for more activity in Japanese market. The Japan Dyestuff Mfg. Company has picked up the following principal American dyes now sold in Japanese market in competition with its products:

Abbreviation: (DUP) Du Pont (NAC) National Aniline (NCW) Newport Chemical.

Direct Colors

Chrysophenine extra conc. (NISSEN)
Pontamine Yellow CH (DUP) Erie Yellow Y (NAC)
Benzopurpurine 4B conc. (NISSEN)
Purpurine 4B conc. (DUP) Erie Red B conc. (NAC)
Nippon Scarlet B (NISSEN)
Pontamine Scarlet B (DUP) Erie Scarlet B (NAC)
Nippon Blue conc. (NISSEN)
Pontamine Blue BBJX (DUP) Niagara Blue XMM conc. (NAC)
Nippon Deep Black extra conc. (NISSEN)
Pontamine Black extra conc. (DUP)
Direct Deep Black E double conc. (NAC)

Sulfur Colors

Nissen Blue RM 180% (NISSEN)
Sulphogene Navy Blue 3RX (DUP)
Sulfur Blue BC 2R conc. (NAC)
Nissen Blue FR (NISSEN)
Sulfindone Blue BF conc. (NAC)
Sulfur Blue BRH extra conc. (NCW)
Methylene Blue conc. (NISSEN)
Methylene Blue ZX (DUP) Methylene Blue SG conc. (NAC)

Acid Colors

Metanil Yellow (NISSEN)
Metanil Yellow (DUP) Metanil Yellow conc. (NAC)
Solar Scarlet 2R (NISSEN)
Scarlett 2R conc. (DUP) Ponceau 2R conc. (DUP)
Solar Blue Black extra conc. (NISSEN)
Pontacyl Blue Black SX (DUP) Buffalo Black G (NAC)

Competition between American and German dyes in Japanese market which is attracting attention is extended mainly to such products as Erie Yellow Y (NAC) versus Pyramine Yellow GX (Badische Aniline) and Chrysophenine G conc (Bayern); Purpurine 4B conc. (DUP.) versus Cotton Red 4BX (Badische); Erie Scarlet B (NAC) versus Dianil Ponceau B (Hoechst, Meyster); Pontamine Blue BBJX (DUP) versus Oxamine Blue BB conc. (Badische); Pontamine Sky Blue (DUP) versus Oxamine Sky Blue 5B (Badische) and Benzo Sky Blue (Bayern); Direct Deep Black E double conc. (NAC) versus Columbia Black EG extra conc. (Berlin AGFA); and many others.

The productive capacity of dyestuffs in Japan at the beginning of 1928 totaled 10,200,000 kilograms, of which 2,400,000 kilograms were claimed by the Japan Dyestuffs Manufacturing Company and 7,800,000 kilograms by all other dye companies, according to the company's report. The dyestuff consumption for 1927 was 8,250,000 kilograms. Imports for last year were yen 5,477,000, a gain of yen 1,083,000 over

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1926. The consumption and production for 1927 were:

	Consumption	Productive Capacity
	(000 kilograms omitted)	
Coal tar dyes,	2,250	1,800
Indigo,	1,200	none
Black sulfur dyes,	3,000	6,000
Aniline oil,	1,800	2,400
Total	8,250	10,200

The Japan Dyestuff Manufacturing Company produced till the end of 1927 after its establishment in 1916 at a capitalization of yen 8,000,000 71 kinds of coal tar dyes, the same number of semi-prepared materials and 21 kinds of chemicals and placed them on market. The company completed the research on 251 kinds of coal tar dyes, 211 kinds of semi-prepared materials and 34 kinds of chemicals during the same period. Last year the company started a new building to manufacture new kinds of dyes. It also sent experts to France to form a connection with St. Denis, French dyestuff company, for promoting the industry. The latest status of Japanese dyestuff industry, investigated by the Ministry of Commerce and Industry, shows the number of dye factories in Japan at 53 with a total capitalization of yen 32,600,000. The number of experts is 526 and that of operatives 3,415. Up to the end of last year the Government paid subsidy amounting to yen 15,000,000 to the Japan Dyestuff Manufacturing Company since its establishment in 1916, as this institution is protected by the Government to declare a 8 per cent. dividend a year for its paid-up capitalization.

DuPont Engineering Co. is constructing the first scientifically designed, large capacity plant for production of solidified carbon dioxide on the Deepwater Point, N. J., property of E. I. du Pont de Nemours & Co. New plant will operate in close conjunction with Eastern Alcohol Corp., from whom it will obtain carbon dioxide gas for solidification purposes.

Texas sunflower (helianthus argophyllus) yields some valuable organic chemicals, such as furfural, and also is good as roughage for cattle feed, reveals an investigation of the chemical composition of that plant by the Bureau of Standards in its efforts to turn the farmers' waste products into profits.

German potash industry is considering formation of a supertrust along the lines of the dye cartel, Commerce Department is advised. Preliminary estimates of 1927 production of pure potash in Germany places the output at 1,300,000 tons.

Delaware soy bean producers are holding the 1927 crop for higher prices, refusing to sell at the prevailing price of $1.35 @ $1.65 bushel. About 2,300 bushels are being held in this way for a price well over the $2.00 mark.

Imperial Chemical Industries, Ltd., through associated company, Synthetic Ammonia and Nitrates, Ltd., gives International Combustion, Ltd., a 800,000 contract for extension of its pulverized fuel plant at its works on Tees river.

U. S. Shellac Importers' Association founds research fellowship in shellac at Brooklyn Polytechnic Institute, to be known as Shellac Research Bureau.

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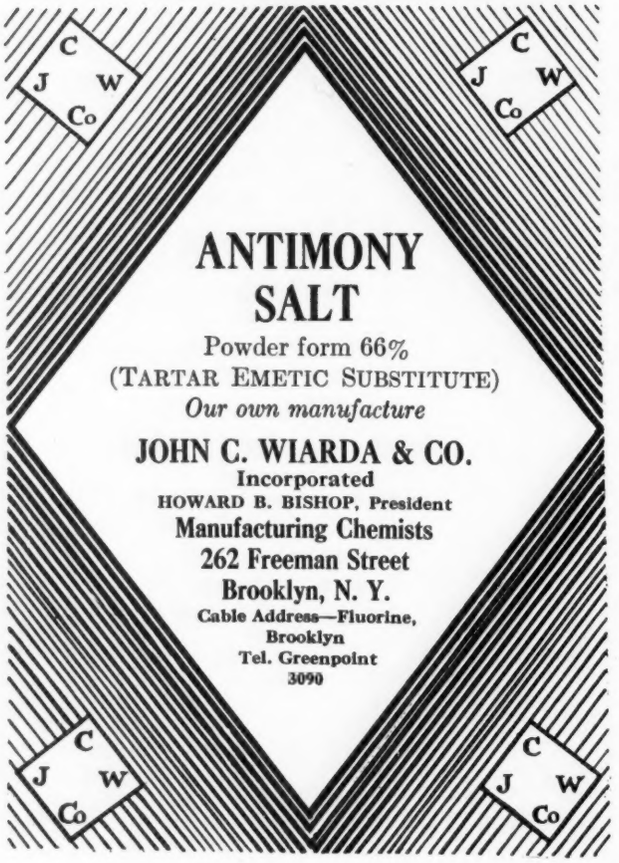

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Japan At The Nitrogen Conference

(*Continued from page 299*)

by experiment stations seeking to improve methods of enriching the soil.

Work on an immense hydro-electric power subject of the Korean Hydro-Electric Co. is proceeding on the Husan River in northern Korea. The plant will be completed in 1931 and will have a generating capacity of 149,000 k. w. The Japan Nitrogen Fertilizer Co. is the representative of interests which are backing the project and is to erect a great nitrogen fixation plant nearby to take advantage of the abundant supply of cheap power. The new plant is expected to produce 300,000 tons of fertilizer annually, a figure almost double the present production of all Japan. The realization of such a project would in all probability turn Japan from an importing to an exporting country of fertilizers.

Further comment made by Japan's delegate for CHEMICAL MARKETS is that there have been reports about a general conference of fertilizer manufacturers for some time although nothing official has been said up till now. The feeling has been growing, however, that such a meeting would be highly desirable to improve the present methods of marketing and producing and maintaining prices. The Guggenheim interests have been conducting a series of exhaustive researches designed to better methods of producing Chilean nitrate and their success indicates that the natural product will be better able in the future to meet the competition of artificial fertilizers.

The production costs for Chilean nitrate have been reduced 50 per cent. by the Guggenheim processes. This, of course, does not mean that there has been a similar reduction in selling costs, because there are still high government taxes in force which amount to about 40 per cent. of the total cost. So far as can be learned there is no direct connection between the German Nitrate Syndicate and the German potash interests. It is possible that they have made some agreement as to the producing of new fertilizers which are composed of both nitrogen and potash, but the two groups probably are not tied together in any other way, Mr. Okumura said.

Bureau of Prohibition announces that constant progress is being made in its attempts to secure denaturing formulas for industrial alcohol that will meet needs of industry, will not be destructive of human life if alcohol is diverted to beverage purposes, will be obnoxious in taste and odor, and will be extremely difficult for bootleggers to break down. Although no changes in existing formulas are contemplated in the near future the bureau will continue experiments to get a mixture so difficult and so expensive to separate that no denatured alcohol will be used for beverage purposes.

United States Customs Court upholds protest of Barletta Trading Co., thus reversing decision of collector of port of San Juan, Porto Rico, in his classification of calcined magnesia, in tin containers which contain several doses, at 25 per cent. under paragraph 23 of tariff act. Duty was set at 3½c lb. under paragraph 50.

French Market For Lithophone

The recent increase in the import duties on lithopone is expected to result in strengthening the French industry and enable manufacturers to meet the normal consumption requirements, according to Consul Alfred D. Cameron, Paris. A survey made by the Ministry of Commerce for a period of years before the war estimated the normal annual consumption of metallic white pigments at 25,000 metric tons for ceruse, 7,000 metric tons of zinc oxide and sulfide, and 5,000 metric tons of lithopone. The estimated average consumption of lithopone for the years 1924 to 1926 inclusive was approximately 18,000 metric tons, of which 8,000 metric tons were produced in France and the remainder imported.

Industry Has Grown Since War

Prior to the war the domestic requirements were supplied chiefly by a plant located at Comines, Nord, operated by the Societe Francaise des Produits Chimiques et des Blancs de Comines, and a smaller factory at Ham, Somme. The former plant was rebuilt after the war with an enlarged capacity of 5,000 metric tons, and is reported to be running at full capacity, with provisions made for further expansion if necessary. The other producers, averaging a total of about 3,000 metric tons yearly are:

Lefrant, Dargaud & Cie., Ham, Somme.

Societe Anonyme des Produits Chimiques d'Estree-Blanche, Saint-Omer, Pase-de-Calais.

Societe des Couleurs Zinciques, Aubervilliers, Seine.

F. Buisson, Fils & Gendre, La Plaine-St-Denis, Seine.

Rene Scherrer, Charenton-le-Pont, Seine.

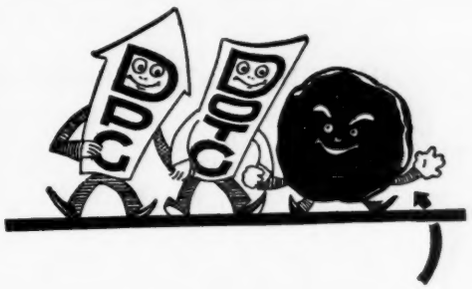
In addition to the above, a small plant is operated by a subsidiary of an American firm in the suburbs of Paris. The firm of Etablissements Kahlmann of the Societe des Produits Barytiquest under new management and by a recent acquisition is planning to manufacture lithopone on a large scale.

The following tabulation shows the imports for consumption and exports of lithopone in metric tons, gross weight, for 1925, 1926 and 1927:

	Imports Metric Tons	*Exports* Metric Tons
1925	10,489	527
*1926	7,634	426
*1927 (eleven months)	2,691	308

*Preliminary figures.

The present tariff rates under the minimum tariff, granted to most European neighbors of France, for lithopone of a strength of 30 per cent. or less is dutiable at 60 francs per 100 kilos, while that analyzing more than 30 per cent. is dutiable at 75 francs per 100 kilos. Lithopone of American origin is assessed at 85 francs per 100 kilos, regardless of strength or purity.



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I. C. I. Bids to Acquire Metal Concern

An offer has been made by Imperial Chemical Industries to acquire the ordinary shares of Elliott's Metal Co., which holds a controlling interest in William Cooper & Goode, Hughes Stubbs' Metal, and Muntz Metal according to a report from Alfred Nutting, American Consulate Office, London.

The offer provides for an exchange of shares on the basis of one fully paid £1 ordinary and one-half of one fully paid deferred share of 10 shillings in Imperial Chemical Industries, for every one £1 ordinary share of Elliott's Metal. A circular issued by the directors of Elliott's Metal Company states that shareholders will, by the exchange of shares, benefit largely by having a much freer market for their shares. In recommending acceptance of the offer, they state that chartered accountants examined the recent figures of Elliott's Metal group, and advised them in the negotiations, and they have the authority of the accountants to state that with a full knowledge of the figures the recommendation is supported. The directors point out that, owing to increasing competition at home and abroad, the tendency of the industry is toward a narrowing margin of trading profits, and express the belief that the transference of their interests to a powerful corporation of such widespread activities as the Imperial Chemical Industries will much more effectively safeguard their interests.

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Sweden Wants Nitric Acid Plant

The Royal Swedish Industrial War Preparedness Commission has requested that an appropriation of 1,250,000 crowns be included in the 1928-29 national budget for the erection of a nitric acid factory at Ljungaverk in Central Sweden, north of Stockholm. The establishment of such a plant is considered desirable from the standpoint of national defense and it is asserted that private initiative can not be expected to enter this field because of the limited market for the finished product. Ammonia for oxidation could be obtained from the plant that is being built at Ljungaverk by Stockholm's Superfosfatfabriks Aktb., the largest artificial fertilizer producer in the country. This company has offered to build and pay the upkeep of a nitric acid factory having an annual output of 2,000 tons providing the Government will supply the requested 1,250,000 crowns. An alternative plan for the erection of a nitric acid factory having an annual output of 7,000 tons also has been proposed. These advices are received from Assistant Trade Commissioner Basil D. Dahl, Stockholm.

STEARATE of ALUMINA

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Niacet Chemicals Corp. moves main office to Niagara Falls, N. Y., from which point it will handle its own distribution.

Chinawood Oil Stocks In China

Advices received by the Chemical Division of the Bureau of Foreign and Domestic Commerce from Consul General Frank P. Lockhart, Hankow, state that the total exports of wood oil for January amounted to 5,972,120 pounds, of which 4,580,345 pounds went to the United States and 1,391,775 pounds were shipped to Europe. It was estimated that at the end of January the approximate stocks in Hankow of wood oil amounted to 700 tons, strongly held by the local hongs. Information as to stocks at Wan-Hsien and Chang-teh was not obtainable.

The market at Hankow opened on January 1 at 26 Hankow taels per picul, equivalent to $0.127 per pound, remaining at that price until the 6th, rising abruptly to 27.90 taels per picul, equivalent to $0.138 per pound, on the 7th. A further increase was made on the 8th to 28.80 taels per picul, equivalent to $0.142 per pound, gradually rising on the 9th to 30 taels per picul, equivalent to $0.148 per pound and to 31 taels per picul on the 11th, equivalent to $0.153 per pound, from which date a sharp decline was made to 29 taels per picul on the 12th, equivalent to $0.143 per pound. A further decline occurred on the 14th to 28.50 taels per picul, equivalent to $0.141 per pound, slowly rising on the 17th to 29 taels per picul, equivalent to $0.142 per pound. Quotations remained at this figure until the close of the market on the 20th for the Chinese New Year Holidays. Reopening of the market on the 28th was at a price of 28.50 taels per picul, equivalent to $0.138 per pound. The market closed on the 31st at 28.80 taels per picul, equivalent to $0.141 per pound. The deliveries of wood oil in Hankow for January were comparatively small and the level of the Yangtze River is still reported to be very low.

According to a recent decree a refund of duties paid on raw materials imported into Polland for the manufacture of ferrocyanides of potassium and of sodium, of Paris blue and Milori blue will be made to exporters of the above commodities at certain specified rates.

Canadian Pulp and Paper Association reports exports of pulp and paper valued at $15,325,936 for December 1927, which is an increase of $122,796 over December of previous year. Exports of pulp wood during 1927 reached record high of 1,541,769 cords valued at $15,702,105 which compares with 1,391,738 cords, valued at $14,066,030 in 1926.

Tung oil production in vicinity of Gainesville, Florida gains impetus by fact that recent cold spell there did not harm the trees. It is estimated that seven hundred additional acres will be planted to tung tree production during this year.

Thickest bodies of potash salts yet revealed by government tests are found in third well drilled in Eddy County, N. M. Potash content ranges from 8.50 to 13.68 per cent. in samples received.

Foreign Trade Opportunities

Carbon black	†28939	Copenhagen, Denmark	Agency
Cellulose, nitro	*28934	Leipzig, Germany	Purchase.
Charcoal, beech retort	*28933	Halle, Germany	Do.
Insecticides (fly sprays)	†28938	Alexandria, Egypt	Agency
Naval stores and rubber chemicals.	*28936	Hamburg, Germany	Purchase.
Paints, house, interior; and linseed oil.	*28960	Tangier, Morocco	Do.
Soda, calcium	*28941	Dresden, Germany	Agency.
Sulphur, crude, 750 tons	*28937	*Orense, Spain	Purchase.
Blueing, laundry	†28996	Alexandria, Egypt	Agency.
Chemicals, heavy, rosin, sulphur, and acetone.	†28999	Hamburg, Germany	Do.
Fumigation supplies for ships-	*28989	Suva, Fiji Islands	Purchase.
Nitrocellulose lacquers, and materials for manufacture.	*28997	Milan, Italy	Agency
Paints	†29089	Lahore, India	Do.
Polishes, floor, furniture, and metal.	†28979	Cairo, Egypt	Either.
Pyroxylin, and other plastics	*29000	London, England	Agency.
Rosin	*28994	Dresden, Germany	Purchase.
Sodium uranate, yellow and orange.	*28995	Meissen, Germany	Do.
Cellulose, paints, lacquers, and polishes for automobiles.	†29178	Amsterdam, Netherlands.	Purchase.
Fertilizers, mixed	*29179	Hamburg, Germany	Do.
Soda and potassium for soap making.	*29205	Baghdad, Iraq	Do.
Water softening compounds	†29161	Santa Ana, Salvador	Do.
Fertilizers, mixed	*29179	Hamburg, Germany	Do.
Soda and potassium for soap	*29205	Baghdad, Iraq	Do.

National Fertilizer Association's second of three sectional conferences with agronomists, establishes so-called triangle method in selection of fertilizer grades. If association's plans for making this system standard for the country materializes, it will revolutionize present method of grade selection without systematic or logical order. This triangle was first applied to fertilizer analyses by Dr. Oswald Schreiner, Bureau of Chemistry and Soil.

The joint conference on fertilizer recommendations held in Chicago in October, 1922, established 14 grades, three of which were essentially muck soil fertilizers, and 11 mineral soil fertilizers. The conference just held adopted 11 ratios, three of which are muck soil fertilizers and eight mineral soil fertilizers. There are 63 possible ratios on the triangle, which suffice for every conceivable soil and crop need. As the need develops, further conferences will be held to add ratios, or to eliminate those which are found by experience to be unnecessary.

Kwantung government plans to subsidize a company for the production of soda ash in Manchuria. The company will receive an original grant of 1,500,000 yen, an annual subsidy for a number of years and a government-built reservoir to furnish water used in soda ash manufacture. It is estimated that soda ash can be produced in Kwantung for yen 76.80 a ton, which compares with 82.80 per ton in Japan.

Rayon imports by United States during 1927 totaled 16,222,544 pounds, valued at $13,623,352, which compares with 10,063,068 pounds, valued at $9,050,665 for 1926.

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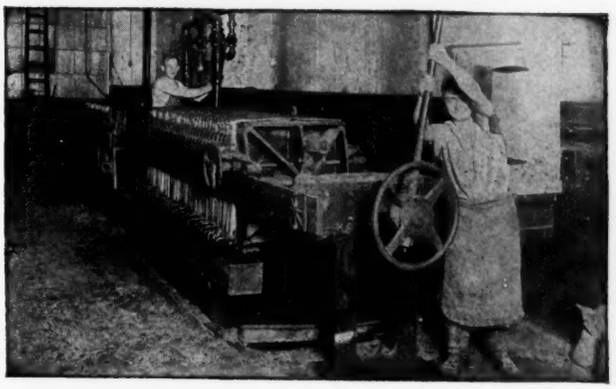

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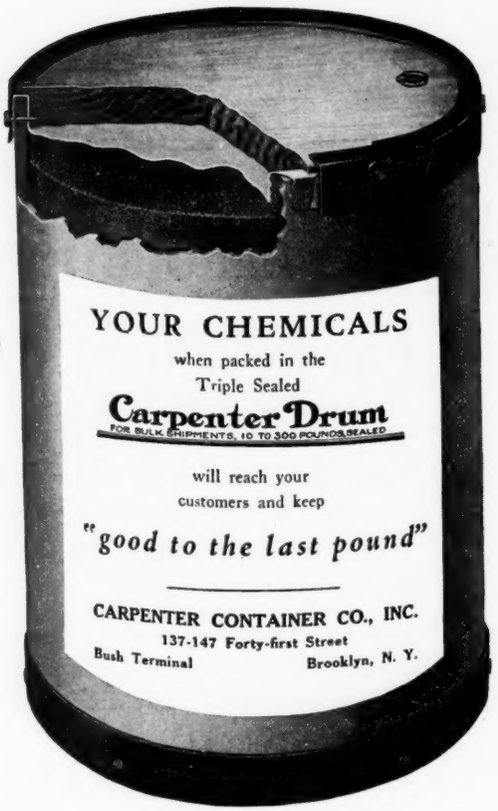

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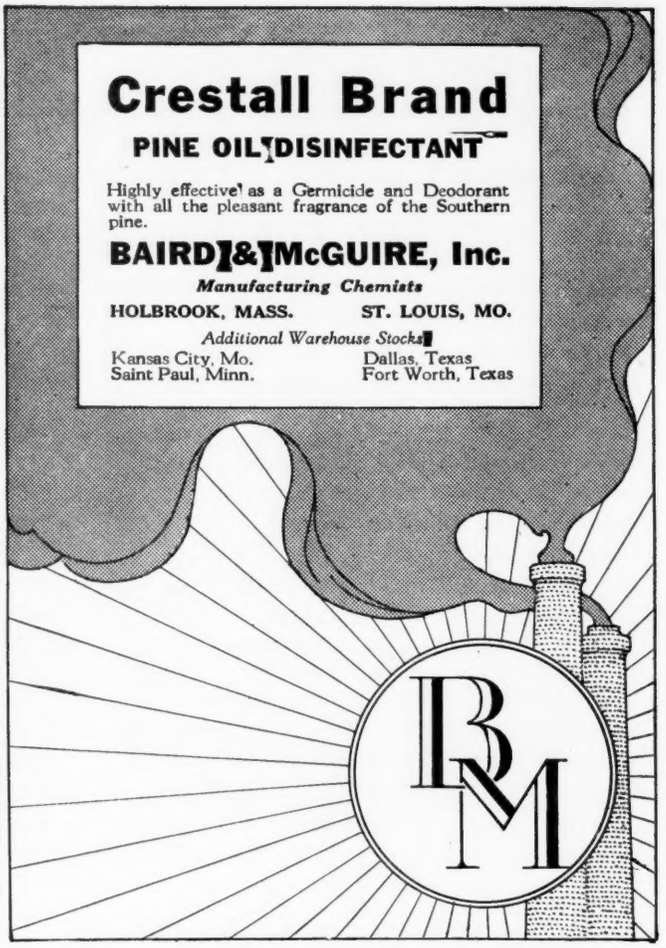

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"WE"—Editorially Speaking

Wall Street is doing quite a little bit of thinking about chemicals these days. Commercial Solvents, Allied, du Pont, Air Reduction, and U. S. Alcohol have become frequent, closely watched ticker quotations; and as a cynical trader remarked the other day, "The sulfurs have certainly given them something to think about during the past six weeks."

Furthermore as time goes on Wall Street is going to think more and more about chemicals. It is perfectly logical that this should be, and it behooves the chemical industry to know what is being thought about it. So, we asked Mr. Gillies, statistician of one of the older, larger of the brokerage houses, to tell you what chemicals mean in the financial markets, and why and how, and if so, how much.

Chemicals are a new idea to Wall Street which is just a little inclined to think therefore, that chemicals are a new idea to the whole country. We suspect that many in that famous thoroughfare would be mightily surprised to learn that first factory established in America was a chemical plant. But Mr. Gillies, who is the last man to claim any expert knowledge of chemical technique, evidences a nice comprehension of some pretty intimate chemical industrial problems in his article, all of which shows that Wall Street, once it begins thinking, thinks to some purpose. It will be very much worth while to have those thoughts directed into sound channels. Nothing would be worse for the chemical industry—or more costly to Wall Street—than to have our financial leaders hold fast to the antique idea that the chemical industry is a grand scientific scheme for making gasoline (or any other valuable commodity) out of sea sand and rabbit's whiskers (or anv other cheap raw materials).

Mr. Gillies almost quarrels with our definition of a chemical company. As a wise old Chinaman once said: "If we could always agree on definitions there would be few arguments and no wars," and while it would be too ungrateful and most ungracious to pick a fight with our contributor, nevertheless the question is so often raised that we want to record our own definition. We define a chemical company as one that uses in its major operations processes that change the chemical composition of its products. Dying, bleaching, tanning are obviously such processes. Rayon, paper, rubber are such products.

MARKETING PROBLEMS

From the head of the biggest manufacturing enterprise to the owner of the corner store all business executives agree that the questions of distribution are those that to-day disturb their night's sleep. Changes in marketing methods touch all industries and the peculiar problems of the chemical group have distinctive and perplexing angles which are the topic of discussion in next month's issue.

Who Controls Industrial Buying ? —purchasing agent ? superintendent ? chemist ? executive?—an authorative review of surveys by J. George Frederick, the famous business analyst.

Salesmen's Expenses —actual samples of the forms and systems of accounting used by ten leading chemical companies.

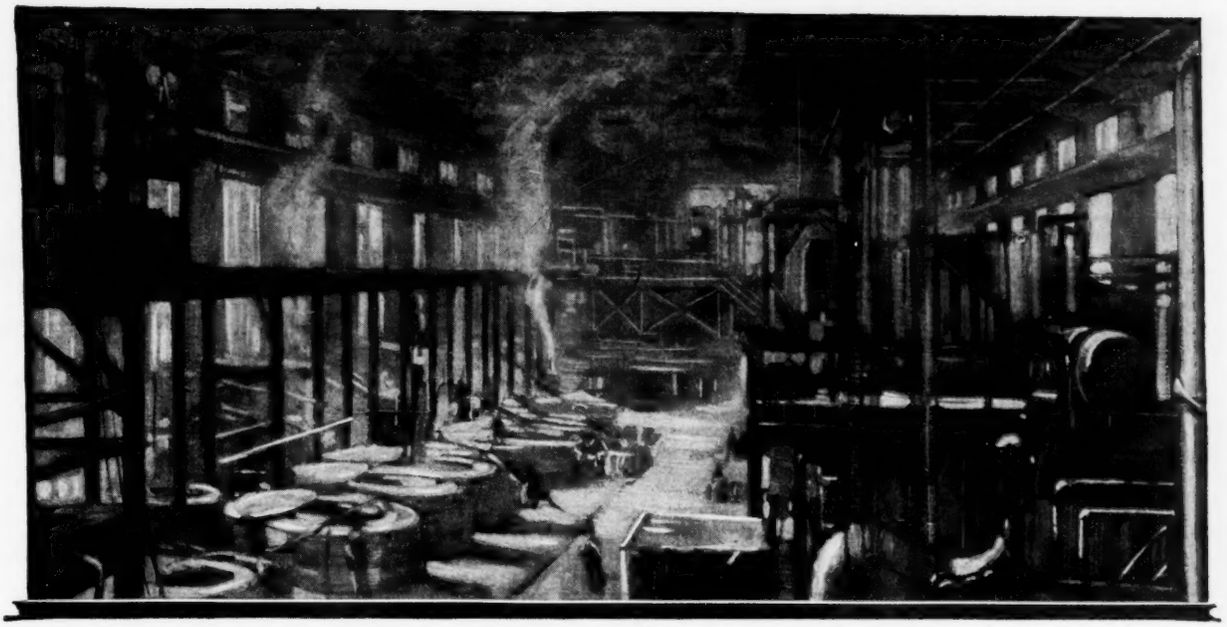
Salesmen's Reports — how chemical firms use the information their outside men collect in increasing sales and cementing personal contacts.

What a P. A. Thinks of Chemical Salesmen. What a Salesman Thinks of Chemical Buyers—A joint article by Norman Peterkin, who buys for the United Piece Dye Works and J. C. McKenna who sells for W. F. George Chemicals—a stimulating peep into both sides of the front line trenches of chemical marketing.

Speaking of definitions, we came to loggerheads recently with a chemical manufacturer in the Middle West as to when a new chemical product reaches a stage that it may be considered a commercial proposition. In dispair we submitted the problem to our Board of Consulting Editors. Dr. Teeple's definition was awarded the cross with a palm and two stars—"A commercial chemical is one that you produce in carlots and sell at a corresponding loss." And right here, you will agree with us we are sure, that any comment we might make on the article which this distinguished chemical engineer has contributed to this issue would be as superflous as trying to sell a nice healthy brood of silk worms in Marcus Hook, Pa.

Returning to definitions: some fertilizer people do not yet admit that they are a part of the chemical industry. One of their leaders recently returned his questionaire for "Who's Who" with the comment that he was not a chemical executive and one of the largest dealers in fertilizer materials was quite startled to find that our prices current report on every material he sells except hog bristles. The retort discourteous is that if the fertilizer industry is not a chemical industry it jolly soon will be. Synthetic nitrogen is here. Ammonium sulfate has been here some time. A new chemical process for making superphosphates has been proved practical, and one of the oldest, biggest strictly chemical companies has for the past three years been turning their surplus sulfuric acid in phosphates. Complete, combined, concentrated chemical plant foods are being imported and unless all rumors are more wild than usual will be made in Virginia shortly. Two of the biggest fertilizer companies have, in turn, invaded the chemical field with trisodium phosphate; several of them are making chemical insecticides; all of the real manufacturers among them are seeking chemical outlets. The chemical revolution has reached this field, and the results will concern alike chemical makers and fertilizer mixers.

Few subjects therefore, could be more timely than the new fertilizer situation, which is the text of several highly important articles in this issue. John J. Watson, a thick-set, quiet-spoken, hard-working financial industrialist, who is fast assuming a place of leadership in this new era, is pre-eminently qualified to tell why it is no function of the fertilizer man to play banker for the farmer. Charles H. MacDowell has fought through the changes of the past twenty years and what he says of new formulas bears the weight of his great authority. Sidney B. Haskell, one of the organizers of the Soil Improvement work and late Director of the Massachusetts Experiment Station, has recently joined the staff of the American branch of the fertilizer branch of the I. G. He knows American conditions: he is in closest touch with German chemical developments. His account of the new chemical fertilizers just perfected is the first description of them published in English in a chemical publication. Dr. Davis sums up the basic economic aspects of fertilizers and Mr. Ruhm—the famous phosphate iconoclast—speaks boldly some dynamic criticism.



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